THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

MAY, 1894.

PARASITES IN THE ANTERIOR CHAMBER OF THE EYE OF THE HORSE.

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As far as I am aware, no special directions for the performance of the operation of puncture of the cornea for the removal of filaria from the eye of the horse is given in any of the standard works on veterinary surgery. But it is generally stated that the cornea should be incised at its junction with the sclerotica, at its upper margin, and the parasite allowed to escape along with the aqueous humour. Furthermore, I have heard it stated that the operation could be performed on the horse standing, and with an ordinary scalpel or lancet protected by a piece of tow or cork, the fingers of the hand being steadied on the eyebrow, and a black cloth or blanket spread on the ground to catch the parasite when it escaped in the gush of aqueous humour. During my early experience in India, I attempted to operate on this plan on three or four occasions, but with the most disastrous results; and, if my memory serves me aright, only in one case, when a large incision was made in the cornea, did the parasite escape in the way it is said to do.

The manner in which I now operate is, first of all, to have the eye thoroughly washed and bathed with a two per cent. solution of boracic acid; a drop or two of castor oil is then instilled between the eyelids, and the whole is covered with a pad of cotton wool and bandaged for a couple of hours before the operation is commenced.

When this is to take place the horse is thrown down in the

usual way, on the side opposite to the affected eye, which must be the uppermost, and chloroform is administered. A bag of sand, a truss of straw, a folded blanket, or any other suitable object, is placed under the head, so that the poll and upper part are elevated and the nose depressed. The bandage is now removed from the eye, and a spring eye-speculum is placed between the lids, so as to open them wide apart. The only other instruments required are a pair of human iris forceps and a narrow-bladed knife—the cataract knives of either Beers or Græfe answer the purpose well.

The incision is made at the upper and outer margin of the cornea, care being taken that the knife is held parallel to the plane of the iris, otherwise there is danger of wounding that structure. The incision should only be just large enough to admit the forceps without difficulty.

The knife is now withdrawn and the forceps carefully introduced, when the parasite is easily seized and removed from the eye. The eye is again bandaged with a pad of boracic cotton-wool, and this is not removed for three or four days after the operation is finished.

By this mode of operating only a very small quantity of the aqueous humour escapes—not more than one-fourth of the total quantity—and what remains prevents collapse of the cornea, an accident certain to occur if an opening is made sufficiently large to permit the worm to escape with the gush of aqueous humour. It also renders hernia of the iris through the corneal wound, or adhesion of the cornea and iris, almost impossible, and the incision is so small that scarcely any cicatrix remains.

Of course, the knife and forceps should be sterilized before they are used.

A CASE OF ANNULAR STRICTURE OF THE RECTUM IN THE DOG.

BY HENRY GRAY, M.R.C.V.S., KENSINGTON.

THE subject of my communication is a fox-terrier dog, aged about two years. I was consulted on March 19th of this year respecting the pain he seemed to evince when he attempted to pass his fæces. The back was arched, the abdomen seemed drawn up, and he yelled out when the nozzle of the enema syringe was inserted into the rectum. I came to the conclusion that the trouble was the effects of neglected constipation, so I accordingly treated him against this complaint, and improvement in his manners and appearance was so manifest that his owner's servant took him away

against my wish, and during my absence from my infirmary, on the 24th.

However, the improvement was only temporary, and a few days after his removal from my charge there was a recurrence of the distressing symptoms, so that the groom undertook to daily administer aperients. Still there was no abatement of the pain, and I was again consulted on April 16th, and I had the dog brought in for further observation. I found that whenever he attempted to pass either the fæces or urine he assumed the exaggerated crouching position of the bitch, at the same time yelling out with pain. On examining the viscera by manipulation through the abdominal parietes, I could detect a hard and painful condition of the rectum. This fact led me to further examine this part by means of passing the well-oiled finger up the anus. Three inches from the orifice I found the gut gave to the touch a hard leathery constricted sensation, and at the same time caused the animal pain. The lumen of the rectum here would not allow an ordinary-sized penholder to pass through. Being of the opinion that passing the bougie frequently would only afford temporary relief, and not promising the owner an absolute cure without an operation, he desired me to destroy his pet, which I did on April 22nd by means of H C N.

Post-mortem Examination.—This was performed as soon as life was extinct. On opening the abdominal cavity and drawing out the viscera, I found the so-called large intestine longer than usual and double its normal calibre, which was uniform throughout anterior to the seat of stricture, which was on a level with a line of junction of the vasa differentia, and three inches anterior to the anal orifice. It had a yellowish-grey appearance, was $\frac{1}{2}$in. in width, and completely encircled the circumference of the gut; it did not seem to raise the peritoneal covering. Excised from its natural position and further examined, the rectum posterior to the constriction seemed of smaller calibre than the rest of the gut. The specimen was then put into cold water and the further examination was postponed till next day, when the gut had a diminished calibre and constrictions appeared at several parts, more notably about 3in. from the ileo-cæcal opening; between the constrictions the gut had fusiform saccular dilatations. On laying open the whole length of this large intestine from anus to vermiform appendix, the interior was filled with yellow pultaceous fæces; after washing this away, the mucous membrane on either side of the stricture was observed to be depressed or furrowed, due to the transverse

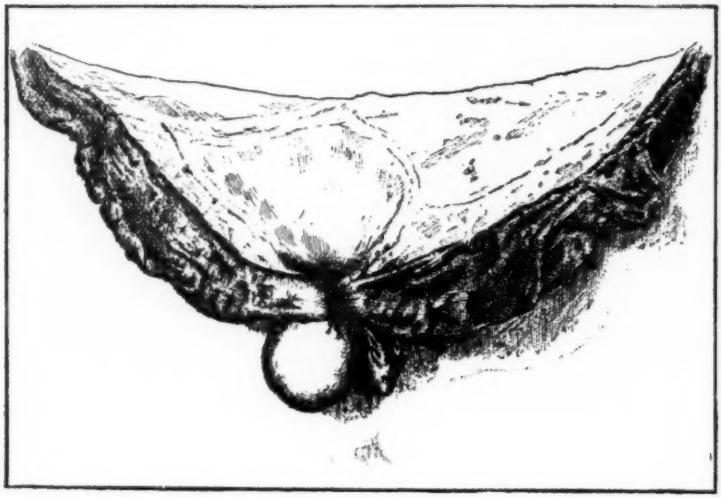
rugæ on the one hand and the central lesion on the other. To the touch and naked eye this lesion gave the appearance of a piece of string or cord. Here the mucous membrane for ½in. was heightened in colour, but there was no indication ot abrasion or ulceration.

In conclusion, had I been requested to attempt a radical cure, I should have certainly tried excision of the rectum, and then brought the posterior free edge of the bowel above the stricture to the anus and stitched it there.

STRANGULATION OF BOWELS BY A PEDUNCULATED TUMOUR.

BY VETERINARY-SURGEON DESMOND, WARRNAMBOOL, VICTORIA, AUSTRALIA.

As intestinal complaints in domestic animals are exciting the



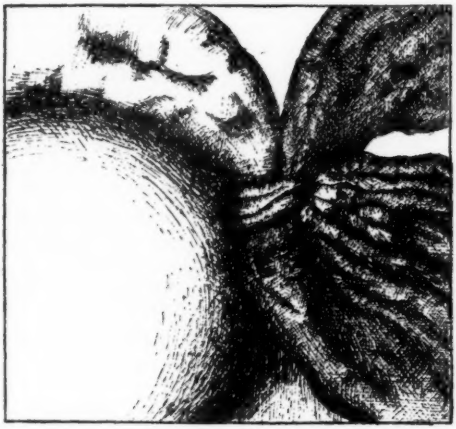
I.

investigations of veterinarians in all parts of the world, the following interesting case may be worthy of being placed on record.

On the 8th September, 1892, at 8 p.m., I was summoned by a medical friend to visit his mare, which had been suffering from colic for some hours. On arriving at the house, I asked why I had not been sent for before, as it was then two hours after dark. My friend replied, "I knew you were busy, and I did not wish to bother you with an animal of no value. I

only got the animal in from the paddock to have it destroyed, as it is too old to be of further service. While waiting an opportunity to have the animal destroyed, it was placed in a large yard where the manure from the stable is gathered. It had a good appetite, and was seen eating the soiled straw that had been used for bedding. When the animal was seen rolling about and sitting up like a dog, with its fore feet upright, I surmised it was colic caused through eating the straw after coming in from the soft feed in the paddock.

On examining the animal I found the pulse 88 and weak, respiration 30, temperature (rectal) 102°, conjunctiva congested. Peristalsis could not be heard with a binaural stethoscope; colon impacted with ingesta. The animal was standing, and seemed to be free from pain. Ingesta having a sour smell was being vomited through the nose. I told my friend he need not arrange for the animal's destruction, as it could not live more than a few hours; and I gave my diagnosis as rupture of the stomach and impaction of colon.



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My friend asked if I would destroy the animal. I replied that, as it was almost comatose, I would not destroy it, but would allow the complaint to run its course, and trust for an interesting *post-mortem* examination in the morning.

Next morning, at daylight, I went prepared for an autopsy. The animal was dead on my arrival, death having taken place about four hours previously, and the body was quite warm. Death appeared to have taken place without a struggle, as the animal was lying where it stood the previous night. The stomach was dilated to its full extent with ingesta. There was no rupture of the diaphragm. The anterior portion of the small intestines was of a livid hue, and as this seemed to be the position of the trouble, a careful examination was

made. About five feet from the duodenum strangulation of the bowel by a pedunculated tumour was found. The bowel for a distance of twelve inches on each side of the strangulation was tied in two places with twine, and the specimen removed for future examination. The bowel posterior to the strangulation was normal and contained ingesta, and all the organs were in a healthy condition. The colon was impacted with ingesta. The animal was very old, some of the molar teeth in the bottom jaw being missing.

Description of tumour:—The tumour measures 3 inches long by 2½ inches broad, and is almost round; weight, 3½ ounces. The pedicle is about 1½ inches long and about 3-16 of an inch thick, and rises in the mesentery in close proximity to the bowel. The strangulation was caused by a half hitch round a knuckle of the bowel, and was so tight that a very fine silver probe could only be passed with difficulty between the pedicle and the strangulated portion of the bowel. The portion of the bowel included in the strangulation measures 5 inches, and contains a very small quantity of ingesta. Microscopical sections showed the structure of the tumour to be lipoma. Drawing I. shows the anterior portion of the jejunum on the right side, with the tumour and the strangulated portion of the bowel in the centre. Drawing II., which is life size, shows portion of the knot and the tumour, and the anterior portion of the bowel on the right hand. The bowel in the drawing anterior to the strangulation is much dilated, having a flattened appearance, and does not contain any ingesta.

TUBERCULOSIS IN RELATION TO ANIMAL INDUSTRY AND PUBLIC HEALTH.

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Its Prevalence and Relative Importance.

TUBERCULOSIS is so extensively prevalent, and proves such a veritable scourge throughout the civilized world, that no disease is so deserving of close and accurate study, or of the enforcement of effective measures for its suppression. Cholera, yellow fever and small pox, which occasionally invade our territory, creating universal terror and dismay, claim but few victims as compared with this ever-present, universally devastating plague. These other plagues are quick, severe and fatal, it is true, but for this very reason they can be promptly recognized and checked, and even stamped out; whereas tuberculosis is equivocal and underhand in its method, slow

and uncertain in its progress, and on this account escapes recognition, while it proves by far the most deadly of any single disease attacking the human family. The average ratio of deaths from tuberculosis to the total mortality is 14 per cent., or one death in every eight; while under special conditions it rises to one in three, as in the Marquesas Islands, or even one in two, as in some of our Indian reservations. Tuberculosis may be classed with "the pestilence that walketh in darkness," while the three other diseases named are like "the destruction that wasteth at noonday." But the deaths from tuberculosis, being constant and uniform, people accept them as inevitable, and fold their idle hands with true Mohammedan fatalism, instead of boldly exposing the hidden deathtrap and cutting short its destructive work.

If the 5,490 deaths from tuberculosis which occur every year in the city of New York could be brought together in an epidemic lasting but one week, no small pox, cholera or yellow fever scare would approach the panic which would thus be created, for when did all three diseases together create such mortality in this city? Nay, if we take the whole civilized world, and compare with the tuberculosis mortality all the accumulated deaths from war, famine, plague, cholera, yellow fever and small pox, we find that the latter are comparatively very insignificant. Yet tuberculosis, like every germ disease, is absolutely preventible, and is allowed to continue its career of death only because of reprehensible ignorance and criminal indifference.

Its Prevalence in the Lower Animals.

Few, if any, diseases maintain a sway over a more numerous genera of animals than tuberculosis. Among the domesticated animals cattle are perhaps the most susceptible, but chickens, guineapigs, rabbits, swine and goats become victims almost, if not quite, as easily. Some have thought that dogs, cats, sheep and horses are exempt, but when inoculated with tuberculous material these all contract the affection readily enough. The fact that they do not contract it in such numbers in the usual way is probably due in part to the greater amount of outdoor life which they enjoy, also to the fact that they have more exercise, which secures for them a better-developed and higher-conditioned muscular system and a full stock of constitutional vigour. After making all these allowances, however, it must be granted that these four classes of animals enjoy a native intolerance to this disease to which the first six classes mentioned are comparative strangers.

Among the less domesticated animals which contract tuberculosis may be named caged apes, lions, kangaroos, deer, elk, gazelle, antelope, birds, and, in addition, the rats, mice and other vermin of our houses and barns. All must, therefore, be considered as possible bearers and disseminators of the infection, and no such animal (indeed, scarcely any animal) can be left out of account in any systematic attempt to root out the disease. Some, however, are justly held to contribute more than others to the maintenance of the affection, and in this sense, in addition to man himself, we must consider as preeminently bearers of this disease cattle, fowls and pigs.

Accurate statistics are wanting to give the rates of tuberculous animals in our herds, as we have no systematic professional inspection of live animals, or of those killed for human food. Even in the large cities of Europe, when such inspections are obligatory in the case of carcases, the data given are so variable as to suggest the acceptance of different standards in the various cities and countries. Thus tuberculous cattle are said to number: In Bavaria 0.225 per cent. (Goring); in Augsburg 0·26 per cent. (Adam); in Baden 0·2 per cent. (Lydtin); in France 0·5 per cent. (Arloing); in Belgium 0·4 per cent. (Van Hertsen); in Paris 6 per cent. (Friedberger and Fröhner); in Holland 20 per cent. (Schmidt); in Pomerania and Bomberg 50 per cent. (Schanz, Albrecht); at Hildersheim, Hanover, 60 to 70 per cent. (Haarstick); in Leipsic 20 per cent. (Rieck); in Edinburgh 26 per cent. (Cope, McFadyean). American figures given by the Bureau of Animal Industry are for Baltimore (mostly cows) 2·5 to 3·5 per cent., and for the packing centres (among 2,273,547, mostly steers) 0·02 per cent. It must be noted that the data from Baltimore is somewhat too favourable for city cows, as these were largely from infected dairies, where the more rapidly fatal lung plague carried off many, before time had been allowed for the development of tuberculosis; and as the vacancies were speedily filled by fresh cows from country districts, the results give the ratio for country herds rather than the normal proportion for the city. The splendid showing for the steers must also be qualified by the remark that the fat and apparently healthy are alone sent to the large distant market, while the unthrifty are held back lest they should spoil the sale.

Steers further largely escape on account of their out-door life with less opportunity for infection, and because they are, as a rule, killed at three years old and under, and tuberculosis becomes more and more prevalent with the advancing age

of the stock. In a large aggregate number of German abattoirs cows suffered in ratio of 6·9 per cent., oxen 3·6 per cent., bulls 2·6 per cent, and calves and yearlings 1 per cent. In Leipsic, tuberculous cows were 26 per cent., oxen 19·5 per cent., bulls 15·4 per cent., and calves 9·3 per cent.

In infected breeding and dairy herds in New York, consisting largely of mature cows, I have found a maximum of 98 per cent. and a minimum of 5 per cent. Again, in healthy country districts I have found hundreds of cows in adjoining herds without a trace of tuberculosis among them.

Tuberculosis Contagious.

In the middle ages tuberculosis in animals was recognized as contagious, and laws were made against the use of the affected carcases as human food; these laws remain in force in Italy and Spain to the present day. In the 16th century the disease was confounded with syphilis, and at the end of the 18th century with glanders—blunders which, however untenable, show the strong conviction that the malady was contagious. The propagation by contagion in herds was recorded in Germany by Ruhling (1774), and Krunitz (1787), and more recently by Spinola, Zannger and others. In France the same is claimed by Fromage, Huzard, Lafosse, Dupont, and Cruzel.

It must be allowed, however, that in the first half of the present century the manifest tendency of the disease to run in families, and to develop under special unwholesome conditions of life, served to weaken the belief in contagion, and in Central and Western Europe such belief had become practically extinct among medical men, when their attention was recalled to the subject by the successful inoculations of tuberculosis on rabbits and guineapigs by Villemin, in 1865. The subject was taken up on all sides by incredulous experimenters, and for a time a keen polemic warfare raged; but slowly the stern logic of constantly accumulating and unanswerable facts compelled all candid observers to accept the doctrine of contagion.

The Germ. Bacillus Tuberculosis.

An even fuller demonstration came in 1882, when Robert Koch, of Berlin, demonstrated the existence of the tubercle bacillus, and showed that the disease could be produced with equal certainty by inoculating with the substance of a tubercle from the ox's lung, or with a pure culture of the germ grown on peptonized gelatine, apart from the living body. Before

publishing his discovery, Koch demonstrated the presence of the bacillus in the expectoration or tubercle of over 100 cases of consumption, and had successfully inoculated 472 subjects —guineapigs, rabbits, mice, rats, and cats, besides dogs, pigeons and chickens. The following are some of the characteristics of this germ :—

Form.—A delicate rod with rounded ends, 1·5 to 3·5 micromillimeter in length (about 1-250th of an inch). They occur singly, or in pairs or chains of three or four connected end to end. When cultivated on blood serum, the groups tend to form elongated rope-like colonies, having a waving or serpentine outline.

Staining.—It is characteristic of this bacillus that it absorbs colouring matter very slowly, and once stained retains its colour with great tenacity. This enables the microscopist to distinguish this amid a mass of other microbes. The opaque particles in sputum, or a section of the tubercle, are stained by prolonged exposure to a warm alkaline solution of an aniline pigment; it is then bleached by a solution of nitric acid (1·3); it is then washed and slightly stained with a colour which will contrast with the first; finally, it is washed, mounted, and examined under the microscope. The rod-like bacillus tuberculosis appears stained with the first colour, while the other bacteria, if any, are stained with the second.

Biology, Life-history. — The bacillus tuberculosis lives mainly as a parasite in the animal body, but may be cultivated on the ordinary culture media containing 5 per cent. of glycerine, and makes the best growth at 100° to 102° Fah. A temperature of 158° Fah. for ten minutes is fatal to it (Yersin). Unlike many bacilli, this shows no spontaneous movement at any stage of its growth. Its development is slow in any medium, the earliest signs of growth being visible only after ten or fourteen days.

Vitality.—As it has great power of resistance to the entrance of colouring fluids, so this germ can hold its own for a length of time against destructive agencies. It retains its vitality and infecting power for nine to ten months in dried expectoration (Koch, Schill, Fischer, De Thoma). In tuberculous cow's lung, dried and pulverized, it infected guinea-pigs after 102 days. In putrid matter it infected after 43 days (Schill, Fischer), or 102 days (Cadeac, Malet). It is not destroyed by gastric juice (Baumgarten, Fischer, Falk).

In sputum it perishes in 20 hours, in a 3 per cent. solution of carbolic acid, in a saturated aqueous solution of salicylic

acid, or in saturated aniline water (Schill, Fischer); in five minutes by iodoform ether; in ten minutes in sulphuric ether or mercuric chloride (1·1000); in three hours in thymol. It dies in a few hours in direct sunlight, and in five to seven days in diffuse daylight (Koch). In an ordinary room it gradually weakens, but remains virulent for at least 2½ months (Sawiskey).

Indestructibility of the Germ.

Drying and heating.—The substance of a tubercle, like expectoration, may be dried up and reduced to powder without lowering its virulence provided too much heat has not been employed in the drying. Although an absolute heat of 158° Fah. for 15 minutes is fatal to the germ, yet in virulent masses, as in meat, it is difficult to determine the actual temperature at all points, and tests are therefore often misleading. Thus Toussaint found that broiled steak, the interior of which by his tests had reached 163° to 176° Fah. was still infecting. Martin heated tuberculous matter in sealed tubes to 212° Fah., and found that even then some germs would exceptionally escape. Chauveau and Arloing found that nothing survived half an hour of the boiling temperature, and Galtier states that 162° Fah., which coagulates albumen, sterilized completely if kept up for a sufficient length of time. If in cooking meat, the blood (albumen) is not coagulated, but oozes out as a red fluid, the temperature has not been enough to ensure the death of the bacillus. Where there is a risk of tuberculosis, therefore, *rare* steaks must be refused.

In milk, as in meat, heat is effective, but at 162° Fah. the contained albumen is coagulated, the liquid acquires the boiled flavour, a tendency to constipate, and a diminution of its digestibility and nutritive qualities. In sterilizing this liquid, therefore, for infants and invalids, it is better to keep the temperature at 158° for a longer period, say half to one hour continuously.

Drying of the tuberculous matter indoors or in the shade, and apart from the above temperature, and its inhalation as fine dust, is one of the most common causes of tuberculosis. In one store with a tuberculous clerk, the dust raised in sweeping out the store infected clerk after clerk, and a similar rising of the virus in dust is a cause of infection in dwelling houses, stores, barns, barnyards, stockyards, and railroad cars. It is now allowed that the infecting matter dried on the handkerchief, and shaken out in the air, is one of the most prolific

sources of infection. So in animals, a manger smeared with the discharge of a diseased animal retains the virus in an infecting state, and infects the next susceptible animal fed from it. Hence, long before the days of Koch and his discovery of the bacillus, the infection of animal after animal which occupied the same stall in succession, had convinced observant stock-owners and veterinarians of the contagiousness of tuberculosis.

Survival in Water and Moist Earth.—Galtier found that the bacillus tuberculosis was preserved indefinitely in springs, ponds and wells, at all ordinary temperatures. Hence the danger of common drinking troughs, of streams that have run past infected herds, or the places where their manure has been put, and of soil that has received the manure or carcases of the deceased. The danger from soils is less from dust blown from the surface, and which has been presumably devitalized by prolonged sunlight, than from the earth that is pulled up attached to the roots of turnips, beets and carrots, or to tubers like potatoes. Grain crops may therefore be grown with greater safety on infected soils than can root crops.

Freezing.—The germ survives a freezing temperature. Galtier kept tuberculous matter at different times in a frozen state for four and five days respectively, and found it still infecting. Neither the winter's frost, therefore, nor the usual alterations of temperature in the soil, can be trusted to speedily disinfect it.

Putrefaction is not fatal to the germ (Cornil, Babes, Mallassez, Vignal, Galtier, etc.).

Heavy salting of meats has been thought to be fatal to the germ in one month. After fifteen days in salt, the germ failed to kill rabbits, but still killed the guineapig, whereas after thirty days it killed neither (Galtier). In salting, however, the meat is impregnated unequally in different parts of the same mass, and therefore, as in the case of a temporary heating, this cannot be relied on as a safe measure of disinfection.

The comparative indestructibility of the germ under any of these conditions, shows that the slow absorption of pigments by the bacillus is significant of an equally tardy penetration by other hurtful agents, and of a corresponding power of resistance to ordinary disinfectant agents.

Accessory Causes of Tuberculosis.

While all must to-day recognize that the one essential cause of tuberculosis is the bacillus, yet it is wrong to ignore

the fact that many conditions of the animal system and its surroundings contribute to the propagation of the disease, or retard its progress. While none of such accessory causes can generate tuberculosis in the absence of the bacillus, yet when that disease seed is present, these conditions often serve to sway the balance toward its advancement and diffusion, or its restriction and suppression. A suitable soil and favorable climate is no less essential for the vigorous growth of the microscopic vegetable microbe, than for the Florida moss or the palm.

Among the most efficient accessory causes may be named:

a. Hereditary Predisposition.

Consumption runs in families, and it has long been supposed that this was essentially a family—that is, a hereditary disease. But as a matter of fact, it is extremely rare to find the offspring tuberculous at birth or before. In many thousands of pregnant tuberculous cows killed in the slaughter-houses of Europe, not more than ten tuberculous calves have been found. To the same effect is the fact, that in calves under a year old, born of cows, six per cent. and upwards of which prove tuberculous, the ratio of tuberculosis is often below one per thousand. In Saxony, with the ratio of tuberculous cattle 16·5 per cent., that of tuberculous calves was only 2 per 1000. At Lyons, out of 400,000 calves slaughtered only 5 were found tuberculous; and at Munich, out of 400,000, there were but 2 tuberculous. Again, in such calves the tubercle is found in a very large proportion of cases in the bowels and adjacent glands, suggesting infection after birth through the milk, rather than in the liver and lungs, which would have been its natural seat if conveyed before birth through the blood. Not a few of the obstinate and fatal bowel diseases of sucking children and calves, are in reality tuberculosis of the bowels induced by the infected milk.

What runs in a family, then, is rarely hereditary disease:—it is in the great majority of cases only a hereditary susceptibility to the disease, tuberculosis. But it is none the less a fearful legacy, being often so potent that the disease attacks certain families as a matter of course, while other families can count on a practical immunity. In the human family this is notorious. In cattle it is no less remarkable. In the Burden herd of Jerseys in 1877, I made examinations, and condemned eleven animals, verifying my diagnoses by examinations after death; and found to my surprise that I had taken every representative of a given family, and left the

pure-bred members of the second family untouched. Both families had mingled freely in the pastures and yards, yet the second family furnished no tuberculous cases, and remained sound from that time onward.

b. Close Buildings, Lack of Ventilation.

Air rendered impure by repeated breathing is so favourable to the propagation of tuberculosis, that it has been looked upon as the sole cause (Macormac). Though now certain that this cannot produce tuberculosis at all in the absence of the germ, yet it is such a potent accessory cause when the bacillus is present, that its importance cannot be too highly appreciated.

For the mild cases of tuberculosis in man, life in the open air, day and night, in a genial climate with pure air, affords one of the best grounds of hope of recovery or mitigation. In the Burden herd above referred to, animals condemned in the spring spent the summer at pasture, with a general appearance of perfect health; yet, when they returned to the barns in the fall, they fell off, so that soon some of them had to be helped to rise in the stall. All the world over, city dairy cows are notorious for tuberculosis. In Europe, where the country cattle are affected in a ratio of 1 to 2 per cent., those in the city dairies suffer to the extent of 6 to 20 per cent. and upwards. Of our plains and prairie steers, the government inspectors at the abattoirs condemned as tuberculous but 0·02 per cent., whereas of the city dairy cows, mostly recently from the country, they condemned 1·23 per cent. The ratio is 1 steer to 60 cows, a most striking fact showing in favour of an open-air life.

c. Dark Stables.

Dark stables are usually dirty and ill-ventilated, and as such they lower the general health of the inmates, and strongly predispose them to tuberculosis. The darkness, however, acts indirectly in depriving the tissues of the body of their due supply of air. The formation of green pigment (chlorophyll) in plants, and that of red pigment in the blood globules, are alike due to the action of light. In darkness both disappear. But the red globules of the blood are the bearers of oxygen to all parts of the body, and if these globules are deficient the whole body is denied its due aeration. The final result is as if the air contained little oxygen, in other words, as in the case of a close building without any means of renewing the air.

d. Insufficient or Unwholesome Food. Overtaxing.

Lack of food, and indigestible or innutritious food, agree in producing practical starvation and weakness, with increased susceptibility to tuberculosis. Hence this disease is the scourge of the half-starved poor, and no less of the rich who abuse their digestive organs, and court chronic dyspepsia. So, too, in our dairy herds the stimulating ration for milk, the warm drinking water and warm atmosphere, together with the enforced rest in the stalls for months at a time, and the clean, careful milking soliciting the gland to act to its extreme capacity, all tend to a lowering of the general health and an increased susceptibility. This sufficiently illustrates how the cow which has been made a milking machine, and which to this end must produce a calf every year, becomes dangerously susceptible to any tubercle bacillus to which it may be exposed. We have developed most valuable qualities at the expense of hardihood, and we must take the consequence. The argument is, not that we should part with acquired powers which give the animal its high value, but that we should recognise the attendant dangers and rigorously exclude the tubercle germ.

e. Breeding too Young.

Breeding of immature animals is a most fruitful accessory cause of tuberculosis, as the demands made upon the system for further growth, for the nourishment of the unborn offspring, and, later, for the nursing of the calf or for the dairy yield, undermine the strength and vigour. In different families of that marvellous dairy cow, the Jersey, this has been carried to such an extent that discredit has been thrown upon the whole breed as one especially prone to tuberculosis.

f. Inbreeding. High-breeding.

Inbred families of cattle are proverbially subject to tuberculosis. This is due partly to a resulting constitutional weakness, which often shows itself in an increasing indisposition to breed to near relatives, though still fertile with strangers. More frequently, it depends on the intensifying and fixing of personal and family characters. The susceptibility to the germ being equally strong in both parents, becomes intensified in their common offspring, just as the beef or dairy characteristics are improved. Indeed, the qualities which make an animal valuable for the butcher or milkman are exactly such as favour tuberculosis. The germ of this disease lives by preference in the lymphatic system,

either in the lymphatic glands, or in the loose connective tissue forming the lymphatic networks leading to these glands. Now the breeds which are pre-eminent for early maturity and rapid fattening, or for a high yield of milk, are remarkable for their excess of connective tissue—as shown by the delicate mellow skin—and in the case of the Channel Island cattle, by the unusually large lymphatic glands. This helps to explain why certain families of beef-making cattle have been virtually ruined by tuberculosis. Yet it would be equally wrong to abandon the improvement of our beef and of our milking breeds. The improvement already attained is essential to successful competition in the market, and prospective improvement will be no less essential in the future. The true and only real remedy is the extinction and exclusion of the bacillus of tubercle.

g. Ill Health.

All acute and chronic diseases leave the system weak, and with less power of resistance to other diseases. Above all, we must fear long-standing diseases which produce emaciation and weakness, fevers which interfere permanently with the blood-forming processes, diseases of the digestive organs which hinder the requisite preparation and absorption of nutritive elements, and diseases of the lungs which form a raw or weakened surface on which the bacillus can grow without hindrance. Again, the germ lives best in a slightly alkaline or neutral medium, and is weakened in the acid contents of the stomach during vigorous digestion. But in indigestion the contents may be too much lacking in acidity to prove hurtful to the germ, and the imperfectly digested morsels enclosing the bacillus may be passed on unchanged into the alkaline intestine, a field especially favourable to the development of tuberculosis. Again, in the intervals between meals, when the acid secretion is arrested, the bacillus in drinking water may easily pass through the sentinel stomach to develop in the intestines.

h. Chemical Poisons in the Tuberculous Body.

The soluble chemical poisons in meat and milk of consumptives will be noticed later as a potent cause alike of susceptibility to tuberculosis, and of its more rapid progress when already in the system.

LESIONS AND SYMPTOMS OF TUBERCULOSIS.

Tuberculosis appears under two great types: the acute and

the chronic, the first of which may run a fatal course of four to six weeks, while the second may last for many years. At the outset in the acute form, and for a great length of time in the chronic, the disease process may be confined to one organ or to one region of the body, and therefore the symptoms may vary exceedingly, according to the particular organ attacked. In many chronic cases, with the tubercles confined to one organ or locality (lymphatic glands, liver, spleen, pancreas, etc.), the victim may be in good condition, and no sign of disease may be recognized by the owner, or even by the veterinarian. In acute cases, on the other hand, and when the tubercles are generally diffused through the body, there is usually fever, wasting and emaciation, in addition to the characteristic symptoms of disease in particular organs.

The lesions being caused by the colonization and local multiplication of the bacillus, they tend to assume a rounded or nodular form, from which has been derived the name of tubercle. Such nodules may, however, be absent, the diseased product being a diffuse infiltration and thickening of the affected part. The early nodule may vary in size from a millet seed up to that of a pea or larger. It is at first red, congested, and firm; soon it may become gray in the centre, though still red outside. With the grayish discolouration comes a gradually extending death of the mass (coagulation necrosis), and disintegration into a more or less soft, cheesy-looking material (caseation). In cattle and chickens this cheesy nodule tends to remain firm, and it may even become gritty through impregnation with earthy salts (calcification). Exceptionally, it will soften into a semi-liquid whitish debris, resembling an abscess, and this excessive softening is the usual course of tubercle in swine. In some cases, however, the tubercle does not break down into a dead cheesy mass, but develops into firm, fibrous, rounded nodules hanging in clusters from the lungs, inside of the ribs or skin, and known as pearl drops (*perl-knoten*), grapes, etc. This form is particularly common in cattle. In man may be found nearly all forms of the disease, the primary hard, red, congested nodule, the same with its grayish disintegrating centre, the firm caseated mass, the same further softened into a white or yellowish semi-liquid pus-like mass, and, in addition, an open unhealthy sore caused by the breaking down of the tuberculous growth on the skin (lupus), or intestine, etc. Similar tuberculous sores are found on the skin or mucous membrane (bowels, throat) of cattle and other animals. In all the many forms and seats of the disease, the bacillus may be found in

the affected parts, and the morbid discharges from the lungs, skin, open sores, etc.

Symptoms in Cattle.

a. Tuberculosis of the lungs. In the chronic cases, which are by far the most common, this may last for months and years unperceived; in acute cases, it may prove fatal in a month.

In recent, slight, chronic cases, there may be no other ground for suspicion than an occasional cough when the animal leaves the hot stable for the cold outer air, when it is suddenly raised in the stall, when it is run for a short distance, or when it drinks cold water or eats dusty food. The cough is usually small, dry, wheezing, and may be repeated several times. When run or driven rapidly, the animal proves short-winded. Yet it may show as good spirits, as clear, full an eye, as smooth, glossy a coat, as supple and mellow a skin, as good an appetite, as rich and abundant a flow of milk, and as much propensity to fatten, as its healthy fellows. An accomplished diagnostician may detect altered sounds on percussion and auscultation of the chest, but from the difficulty introduced by the heavy muscular shoulder, the frequent variations in the size of the heart, the rumbling and crepitating sounds from stomach and bowels which, according as they are full or empty, press forward and diminish the size of the lungs, and greatly mask or modify the results, even the able practitioner cannot be trusted to detect these, and the case fails to be recognized. There may be a flow from the nose, in which bacilli should be detected by the microscope, but cattle have a habit of cleaning the nose with the pointed tongue, so that the virulent particles are difficult to secure, and when secured they prove to contain few bacilli; so that failure to find these would not be so reassuring as it would be in man. As a large proportion of cases of chronic tuberculosis of the lungs are of this kind, the tuberculin test, to be noted below, becomes practically indispensable.

When the lungs become more extensively involved, symptoms are more distinct and reliable, and the animal usually falls off in condition; yet in many cases cattle in good condition are killed for beef, and the lungs and ribs are found to be literally covered with clusters of fibrous tubercles (grapes). Usually in advanced cases the hair is dry, lustreless, and erect in patches, especially along the back. The skin is dry, powdery, and rigid, without its customary mellow touch or mobility on the parts beneath. The eye is less prominent

and brilliant, the breathing is more easily accelerated, the cough, more frequent and easily roused, is often gurgling or rattling. and may cause a discharge from the nose of a whitish, flocculent, sometimes gritty material; in the flocculi bacilli may sometimes be found. The odour of the breath is heavy and mawkish. Pinching of the back at the shoulders or loins may cause wincing, groaning, or cough; as may also pinching above the breastbone, or striking the ribs with the fingers or fist. Percussion over the ribs reveals spots where there is a lack of resonance, apart from the solid masses of the heart, liver, spleen, and stomach contents; and listening over these spots will detect that variety of morbid sounds familiar to the physician, the most prominent being rubbing, wheezing, creaking, or fine crepitation, mucus, rattling, and various blowing sounds. A remarkable feature of tuberculosis —distinguishing it from many other forms of lung consolidation attended by unnatural sounds—is the occurrence of such changes in patches, with intervening spaces of sound lung. Ordinary inflammations more commonly attack one portion, and spread from that as a centre, extending the solidification in one or all directions. Arrived at this stage, the animal usually fails to make flesh satisfactorily on the best feeding, and milk is not only lessened but becomes poor, blue, and watery.

The tubercles tend also to form more in other organs, notably the lymphatic glands and bowels, and digestion and assimilation being thus seriously interfered with, emaciation advances more rapidly. This advance may be largely accounted for by the fact that the infecting expectorations brought up with the cough are largely swallowed, to affect stomach and bowels. The animal has now diminished and capricious appetite; irregular, infrequent, and slow rumination, and slight tympanitis after meals. The body temperature is more variable, and more frequently high than in the slighter forms.

In the advanced stages of lung tuberculosis, everyone can recognise the consumptive animal. It is miserably poor, and wastes visibly day by day; the dry coat of hair stands erect; the harsh scurvy skin clings tightly to the bones; the pale eyes are sunken in the sockets; tears run down the cheeks; a yellowish, granular, fœtid, and often gritty discharge flows from the nose, the breathing is hurried and catching, the breath fœtid. The cough is weak, painful, and easily roused by pinching the back or breast, or striking the ribs. Tapping the ribs with fingers or fist, and applying the

ear, detect far more extensive changes, including in many cases evidences of blowing into empty cavities (vomicæ), and loud gurgling. Temperature may vary from below normal to 107° Fahr.

In all such cases there is extension of the disease to distant organs, and symptoms as given below complicate those of lung disease. To give the means of diagnosis of tuberculosis from some diseases of the lungs which most resemble it in symptoms (lung worms, hydatids, actinomycosis, lymphadenitis, etc.), would unduly extend this article, without corresponding advantage to my present class of readers.

Tuberculosis of stomach, bowels, and mesenteric glands—In young animals living on milk, tuberculosis of the bowels and glands gives rise to indigestion, fœtid diarrhœa, bloating, and, finally, enlargement of the superficial lymphatic glands, and the affection of the lungs if the animal should survive long enough. In older cattle there is impaired irregular appetite and rumination, slight bloating after meals, a tendency to scour when liberally grain fed, costiveness alternating with scouring, colics, and usually a more pronounced wasting than with the lung disease. The oiled hand introduced into the last gut may detect the enlarged mesenteric glands, which must be carefully distinguished from hardened fæces in the bowels, from the ovaries, from masses of fat, etc. The temperature is raised in proportion to the activity of the tubercular process.

Tuberculosis of uterus and ovaries.—These and their supporting membranes or ligaments are often implicated in the bowel disease, giving rise to undue generative excitement. They may also become primarily infected through coition. The affected cow is usually sterile, sooner or later parting with any ovum that may have been impregnated. Later her *heats* may become more intense and last longer, and never lead to impregnation. The cow spends most of her time wandering around, bellowing for the bull, neglects to eat or ruminate, and wastes away rapidly. There is often a whitish discharge from the vulva. The temperature is elevated, and general tuberculosis sets in sooner or later.

Tuberculosis of the liver, spleen, or pancreas.—The liver is one of the first organs to suffer in infection through the stomach and bowels, and it may be exclusively affected in calves, and even in mature animals. Tuberculosis of the liver may be accompanied by impaired appetite aud digestion, bloating after meals, and in exceptional cases by jaundice, but often an indefinite ill-health is all that can be detected.

Pancreatic and spleenic tubercle are marked by a similar obscurity of symptoms. It is usually only when the disease begins to be generalized, that distinct objective symptoms are available.

Tuberculosis of the kidneys and bladder may be attended by extra sensitiveness of the loins to pinching, and by frequent passage of urine, more or less discoloured by blood or mixed with purulent matter. Examination of the microscopic blood casts in the urine, after having stained them, may reveal bacilli.

Tuberculosis of the throat. Pharyngeal glands.—This is one of the most common types in cattle. Attention is usually first drawn by a wheezing breathing, the sound manifestly coming from the throat, and the glands around that part are felt to be enlarged, unequal on the right and left sides, or shrunken and of a gristly hardness, or softened, and even fluctuating, on pressure. The formations above the throat and beneath the first bone of the neck, are particularly liable to undergo this special softening. There is usually a loose gurgling cough, some difficulty in swallowing, and a slimy discharge from the mouth. Small tubercular growths may exist on the lining mucous membrane, and this sometimes extends into the air passages, causing *tuberculosis of the larynx*, with a persistent paroxysmal cough, and a harsh altered voice.

Tuberculosis of the udder.—A portion of a single quarter is usually first affected, causing a circumscribed swelling harder than the rest of the gland, but not hot or painful, and this gradually extends to the whole udder. With this extension the gland becomes harder, the milk is lessened, more watery and clotted, and the lymphatic glands in front of the udder and behind are enlarged, and hardened. The gradual advance of the disease serves to disarm the milker of any suspicion, and the milk is commonly utilized until its watery or grumous appearance draws special attention to the gland. The case may be tested by inoculating with the milk, or less satisfactorily by a microscopic search for the bacillus, or the tuberculin test may be applied.

Tuberculosis of the lymphatic glands.—In cattle the lymphatic glands are often found to be tuberculous to the exclusion of internal organs; and as this form of the disease tends to become chronic, it is likely to be overlooked for a length of time. Wherever a group of these glands exists, there may be tuberculosis. In addition to those already cited, may be here named;

a. The submaxillary glands situated on the inner side of the lower jaw, at the point where the pulse is felt. These, which are almost imperceptible in their natural condition, may swell up to any size, soften, burst, and discharge a cheesy matter. They are most liable to be confounded with actinomycosis of the same region, but do not show the almost microscopic, hard, yellow clusters of the actinomyces. They yield in place the specific bacillus.

b. The glands at the root of the ear.—These swell in front or behind the ear, soften and, like the submaxillary glands, they may or may not burst and discharge.

c. Glands inside the chest, mediastinal, bronchial, etc.—The mediastinal and bronchial glands lying between the lungs in the centre of the chest are often affected independently of the lungs, and give no easily available symptom. A persistent nervous cough and some unthriftiness, though on good liberal rations, may arouse suspicion, but cannot lead to diagnosis. If the *glands on the walls of the gullet* (*œsophageal*) are implicated, the vagus nerve and stomach may be involved, and digestion, rumination, and the eructation of gas may be interfered with, so that chronic tympanitis may be added to the suggestive, though by no means diagnostic, symptoms. Equally obscure are the indications of disease of the *glands beneath the back bone and those above the breast bone.* Of the more superficial glands of the trunk, the following are the most easily examined :

d. Glands in front of the shoulder blade.—This group is in front of the middle of the shoulder blade, and may easily be seized by the hands in thin cattle. If enlarged unequally on the two sides, or if very hard and nodular, though small, suspicion may well attach to them. It is only on rare occasions that they burst and discharge.

e. Glands above the stifle.—These placed on the side of the flank in front of the stifle can also be grasped and examined. Indeed in certain animals, notably in the Channel Island breeds, they can be seen by the eye. Swelling, inequality, hardness and nodularity, are the usual suspicious features. Often smaller, pea-like, or hazel-nut-like masses are found scattered over the lateral walls of the belly, from the last rib to the hip bones, and even in the interval between the two last ribs-

f. External inguinal glands.—In the male the glands on the sides of the scrotum, and in the female those on the sides of the udder, may be felt to be enlarged when affected with tuberculosis.

g. The posterior cervical glands, situated in the lower end of the furrow that lodges the jugular vein, may be similarly implicated and recognized.

The deeper-seated groups of lymphatic glands need not be individually referred to, for though subject to tuberculosis they rarely show as external swellings. Tubercles, however, may appear in any part of the skin. I have found a caseated mass like a hickory nut on the point of the shoulder, and fibrous warty-like growths on the skin, and open unhealthy sores with hard fibrous surroundings may be fibroid tubercle.

It must be borne in mind that the lymphatic glands are liable to become congested and inflamed from other sources of irritation in themselves and in their vicinity, so that the mere fact of disease of these glands is no sufficient evidence of tuberculosis. It is, however, ground for grave suspicion, and further exculpatory evidence is demanded.

Tuberculosis of bones and joints.—This is especially seen in young growing animals, being common in calves in badly-infected herds. Wm. Mueller has produced it experimentally, by injecting into the nutrient artery of the bone in a three-month's goat. The bones most commonly attacked are those entering into the formation of the elbow and knee, and the stifle and hock, and as the disease usually extends from the gristly growing substance in the bones of the joint surface, the trouble is recognised as disease of the joints. In some instances, however, the disease begins in the lining membrane (synovial) of the joints, and forms fungous growths extending into the bone In the open (cancellated) tissue on the end of the bone, it is at first red and congested, later it is partly fatty and caseated. Usually the disease becomes general, but if it remains circumscribed, it is enveloped in a layer of dense hard bone. The animal is very lame, perhaps even unable to rise, the joints are swollen and tense, and the ends of the bones are enlarged and tender. The disintegrated bone may even crumble, and the sharp spiculæ protrude through the skin.

Further Indications of Tuberculosis.

The above outline of symptoms seen in cattle, is rendered necessary by the invariable question, "how can I recognise it?" The intelligent reader will realise from the partial sketch above, that it is no simple matter to diagnose tuberculosis. It is to be hoped that he will also have apprehended

so much of the subject as will save him from being victimised by the man who boasts loudly but really knows little.

In the multitude of equivocal and occult cases, further tests must be applied. These may be named as (1) microscopic search for the bacillus; (2) inoculation; and (3) injection of tuberculin.

Inoculation.—The first-named test having been already incidentally referred to, inoculation may be noticed. This consists in the introduction into the peritoneum or other part of a guinea-pig or other animal, of some of the suspected product (discharge from the nose, milk, juice from an enlarged gland, etc.) General abdominal tuberculosis should be present in the guinea-pig in 30 days. Beside the delay, this has the draw-backs that the guinea-pig may have been already infected before the inoculation, the portion of the suspected product may have been devoid of bacilli, though these were abundant enough in the animal from which it was taken, or the guinea-pig may have become infected after the inoculation, from being kept in an infected place, or from infected food, water, attendants, etc. We must first secure for the guinea-pig the very guarantee we are seeking for the larger animal. Is it not, then, better to secure this for the larger animal first, and avoid all the subsequent sources of fallacy attendant on an inoculation experiment?

The tuberculin test gives prompt results, and is less open to fallacy.

Tuberculin.

Tuberculin, or *Koch's lymph*, consists in the concentrated sterilized liquids in which the bacillus tuberculosis has been grown. It contains no living bacillus; all germs have been killed by heating; but it does contain the chief poisons which are produced in the tuberculous body, and which bring about all the diseased processes in such body. A possible exception may be made of any such poisons as are destroyed by heat, if any such there be, in tuberculous products. It must be distinctly understood that in every contagious disease there is, 1st, the germ which grows and multiplies in the susceptible animal system, but is not, in itself and by its mere presence, necessarily injurious: and, 2nd, the products of the life of that germ which may or may not be poisonous. The many germs which continually enter the animal body have products that are not appreciably poisonous, and therefore produce no disease; whereas the few that do manufacture poisonous products cause our different contagious diseases.

We find a counterpart in the yeast germ, which in itself is virtually harmless to man, whilst the alcohol which it manufactures from sugar under certain conditions, is a poison more or less hurtful, according to the susceptibility of the person taking it.

Tuberculin consists of chemical poisons which the bacillus secretes or manufactures, and to which the force and all the manifestations of tubercle in the tissues are chargeable. Having no living germ, it cannot increase its own substance, nor can it cause tuberculosis in a healthy system, as it is soon thrown out of the body through the kidneys and other channels, and its power for evil is at an end; yet none the less is it the immediate agent through which all the destructive work of tuberculosis is carried on. Where the bacillus tuberculosis lives and multiplies in the animal body, these chemical poisons are being constantly formed; and thus its pernicious action is continuous, not only in the seat of the tubercle, but through the whole system.

Tuberculin as a Test.

The tuberculin test is based on the fact shown by Koch, that it increases the activity of the disease process in tubercle, and affects the whole animal body, producing a reaction or rise of temperature in a marked degree. On the ordinary tubercle as seen on the surface, the frequent use of tuberculin produced a more active process of cell growth, leading to degeneration and death; so that there was a more speedy transition from the red congested nodule, through the grayish degeneration, into the dead cheesy mass cut off from all blood circulation. If this dead mass were sloughed off, leaving sound tissues to heal, that particular tubercle might be cured. But deeper tubercles usually exist, and these are similarly stimulated and their degeneration hastened by the tuberculin; it is impossible for them to be cast off; the increasing masses of bacilli which have been produced under the rapid growth, are shut up in the solid tissues around, to furnish new seed for a fresh extension of the disease. As such deep-seated tubercles usually do exist with superficial ones, they render tuberculin almost useless as a curative agent, since to eradicate the disease the deep-caseated tubercles must be afterwards removed by surgical means, a resort which might have been had at the beginning, and without the use of tuberculin.

But this action which renders tuberculin so objectionable as a curative agent, makes it of the highest value as a test of

tuberculosis in animals. The minute dose which has no effect on a healthy cow, horse, or pig, when employed on the slightly tuberculous one produces an acceleration of the disease process, and in eight to fifteen hours a material rise of temperature. This has been now employed on thousands of cows, and those who have used it most value it the most highly; whereas many who at first reported reactions in non-tuberculous animals are now acknowledging, with Nocard, that the fault has been mainly their own, for small tubercles were present, but were overlooked, through their failure to examine the bones and other organs.

The explanation of the reaction under tuberculin may be very simply stated. The dose is made so small that it will not affect a healthy cow under ordinary conditions. In the slightly-diseased cow the system contains a certain amount of tuberculin produced by the bacillus in the tubercles, but to this the system has become accustomed, and it causes no very appreciable fever. But when, in addition to this, we introduce into the body of this cow the small amount of tuberculin used for the test, the increased dose acts on tubercle and nervous centres alike, and a fever is produced. So evenly balanced has been the tolerance acquired, and the amount of poison tolerated with impunity, that four drops of tuberculin will, as a rule, produce this elevation of temperature in the moderately-tuberculous cow.

Objection to Tuberculin as a Test.—1st. The temperature sometimes rises in a non-tuberculous cow after the use of the tuberculin.

This is true. So does the temperature sometimes rise in a non-tuberculous cow when no tuberculin has been employed. Every animal is liable to suffer from inflammation and fever, and if such inflammation and fever set in after the use of the tuberculin test, they are liable to be charged to it as their cause. This is a valid argument against the reckless popular use of the tuberculin, but surely not against its use in skilled hands. The person who uses the tuberculin on cattle must be a trained veterinarian acquainted with the different diseases of cattle, and on his guard against confounding any one of these with the temporary fever caused by tuberculin in the consumptive. If it is claimed that every rise of the body temperature after the use of tuberculin must necessarily demonstrate the existence of tuberculosis, then truly tuberculin will be discredited. But if it is held rather that a rise of temperature after tuberculin, in a cow that furnishes to the most careful and skilful comparative pathologist no evidence

of other disease, implies the existence of tuberculosis, the claim is substantially correct. To secure the valuable testimony of tuberculin, the practitioner must be highly skilled in the diseases of the animal operated on. If he is not he will be occasionally misled.

Again, *heat* or *bulling* may come upon a cow after the use of the tuberculin, and the temperature will rise two or three degrees. To call such a cow tuberculous would be inexcusable carelessness. Yet the condition demanded—the rise of temperature after the use of tuberculin—is present.

Again, a cow that is closely approaching calving has the temperature raised. If tuberculin has been used it is often raised higher than it would be otherwise. It is therefore improper to use this agent on a cow at this period.

Active exertion, exposure in the hot sun, confinement in a close building, the deprivation of water at the customary time, and other conditions, will cause rise of temperature. But such a rise would not imply tuberculosis, even after tuberculin.

Apart from these and other such causes of error in unskilled hands, the rise of temperature from this test should be taken not as a condemnation of tuberculin, but as a stimulus to search for small occult tubercles. A thorough search will rarely prove fruitless.

2nd. The temperature sometimes fails to rise under the tuberculin test, though the animals be in the last stages of tuberculosis.

This also is true. Here the body seems to be already so saturated with tuberculin, that the small addition made in the test makes no impression, and if we trusted to the reaction alone we would pronounce the cow free from the disease. But such cases are easily diagnosed without tuberculin. Even the unskilled more than suspect them, and a physical examination by the skilled practitioner leaves him in no doubt as to their condition. To use tuberculin on such cows is to waste an expensive agent, and to run the risk of being misled. Objection based on blunders of this kind is valid enough as an argument against the use of tuberculin by the ignorant and thoughtless, but not against its use by an able practitioner.

3rd. Tuberculin causes reaction in even the slightest cases of tuberculosis, in which the victims would survive for years and might recover.

This charge is also true, and it is because of its truth that tuberculin is invaluable and indispensable as a diagnostic

agent, in all attempts to put an end to the disease. An eminent German professor (Eggeling), in objecting to the use of tuberculin as a general test, records the following experience. In a herd of 37, reaction after tuberculin occurred in 31, while six gave no reaction. When killed the six proved sound, and the 31, without exception, tuberculous. But of the 31 only one had general tuberculosis, and was condemned as unfit for food, and one was sold as second-class meat. The 29 brought first-class prices as meat, and having been only slightly affected, would probably have lived for years without infecting others. Now, it is submitted that the German standard as thus given is not radical enough to secure safety for man or beast, nor to give hope of an early extinction of tuberculosis. The meat of the animal with two or three tubercles in one organ is generally, but by no means always, free from the germ. When the disease does extend from such isolated tubercles, as often happens, the germ is carried not only in the lymph, but in the blood, and with tubercle in the body, no one can tell when the bacillus has passed into the circulation, and reached the different organs. Tubercles usually form slowly, and the bacilli must have been in the blood for some time before they show as fresh tubercles in tissues and organs distant from the old ones. The meat of a tuberculous animal can never, therefore, be fully guaranteed as safe to eat. But again, while a cow with one or two tubercles only in the lymphatic glands may not be liable to transmit the disease to others, yet whenever an extension takes place, the germs being carried by the blood, and, therefore, throughout the whole system there must always be danger of their escape from the natural surfaces (lungs, udder, liver, bowels, etc.), to infect other animals. And let it be borne in mind that this diffusion through the blood takes place before its occurrence is revealed by the formation of tubercles in new situations. So long, therefore, as a single victim of even slight tuberculosis is left in a herd, it can only be looked upon as an invitation to a renewed extension of the disease. It also may become at any moment a source of infection for man, through the use of the meat or milk. It is only in degree that the contagion of tuberculosis differs, as to its sanitary aspect, from that of any one of the more contagious diseases; and in all alike, so soon as we attach more importance to the preservation of an infected animal that will probably recover, than we do to the radical extinction of the disease, we undermine and destroy the effectiveness of our sanitary work. Practically, all cases of foot-and-mouth

disease recover; yet the frequently recurring epizootics of this disease each cost from $5 to $10 per head over the entire bovine population. Of the victims of Rinderpest and Lung Plague that do not speedily die, practically all recover. Are the slighter cases, therefore, to be kept alive to perpetuate indefinitely those disastrous visitations that sweep away values of hundreds of millions? Is the remorseless scourge of tuberculosis to be perpetuated, not only in herds, but in our homes as well, to save for a few months or years some tuberculous cows? No country has ever dealt successfully with any of these animal plagues on the basis of preserving the mild cases for recovery. Always and everywhere it has been by the radical and thorough extinction of the disease germ, wherever found, that success has been achieved. While this cannot be done for man, it must be done for our flocks and herds if we would ever cut off this prolific animal source of tuberculosis from the human race. Even as regards the herds themselves, the stockowner who would consult his own future interests, would at any cost exclude from his barns and fields every possible source of future tuberculosis.

As will be shown below, the meat and milk of tuberculous animals contain tuberculin (even when they do not contain the bacilli), and serve to aggravate any existing or latent tuberculosis in man.

4th. A fourth objection to the tuberculin test is its alleged liability to produce tuberculosis in healthy animals, or to aggravate it in the tuberculous ones.

Now tuberculin, properly prepared, is absolutely sterilized, so that it can plant no living germ, nor start the growth of any tubercle in a healthy animal. The further claim that it aggravates tuberculosis which is already in existence, is too true, and is the sound basis of its value as a test. As a means of testing the existence of tuberculosis in man, it cannot be too strongly condemned since no man has a right to seal the fate of his fellow for the sake of finding out if he has tuberculosis. The same condemnation must be passed on the use of tuberculin as an alleged curative agent, except in those few cases in which the tubercle is confined altogether to the surface of the body, whence it can easily be sloughed off. The existence, or possible existence, of an internal or deep-seated tubercle in man, should forbid the use of tuberculin for diagnosis or for curative purposes.

The same remark would apply to animals, if we adopt the German view that it is impolitic to destroy those that are only slightly affected. If tubercle exists, no matter to however

limited an extent, tuberculin tends to aggravate it, and the owner who wishes to preserve his mild cases cannot desire to have them made worse, which means to have the disease extended, and possibly generalized.

So in government sanitary work. Unless the government is prepared to slaughter and pay for every animal affected with tuberculosis in however slight a degree, it has no right to use a tuberculin test. It is only when the State means to make thorough work in eradicating tuberculosis from the herds that the tuberculin test is at all admissible. But when the state aims at the thorough extinction of the disease in our herds, this test cannot be omitted, as it is absolutely essential to success. The temporary aggravation of the disease is no possible harm, when the animal is to be promptly killed and paid for.

To sum up: The tuberculin test aggravates existing tuberculosis, and is, therefore, unwarrantable for use on man or on cattle that are to be kept alive; it is, however, the only known means of detecting many occult cases of tuberculosis, and is, therefore, indispensable in any systematic effort to *stamp out* the disease by the purchase and slaughter of every tuberculous animal.

Meat and Milk of Tuberculous Animals Unfit for Food.

In this connection we must consider two questions essentially distinct from each other, and equally important in a sanitary sense. The first is the question of *infection* by the use of such food products, and has been very fully investigated by pathologists and sanitarians. The second question—that of *poisoning* by the pernicious products of the germ—has hitherto been entirely ignored by sanitary writers and administrators. It will be convenient to consider these questions separately.

I. Infection by Bacilli in Meat and Milk.

First, however, it will be instructive to compare the geographical distribution of cattle and that of tuberculosis, not with the view of showing that most of the tuberculous infection of man comes from cattle—for it probably comes mainly from his fellow-man—but to demonstrate, rather, that in some way the intimate relation of cattle to man is a potent agent in the extension and maintenance of consumption in the human family. To the student of this subject it is plain, that where cattle are few, or absent, consumption is relatively less prevalent in men. In northern Norway, Sweden, Lapland, and

Finland, where reindeer constitute the chief farm-stock; about Hudson's Bay and in the islands of the Pacific, where no cattle exist; and in the Scottish Hebrides, Iceland, and Newfoundland, where cattle are few, tuberculosis is far less prevalent in man. In Algiers (a resort of consumptives), the cattle are few and live in the open air apart from the cities, and tuberculosis does not increase among the natives. In Italy (another resort of consumptives), where cattle are housed, tuberculosis has become the scourge of man and beast (Perroncito). In Australia (a great resort for the English consumptive), the disease, formerly unknown, has become exceedingly prevalent, and the same is becoming true of our own Minnesota, formerly so lauded as favourable to weak lungs.

In the temperate regions of Europe and the United States, at least every eighth death is due to consumption. Dr. Biggs tells us that in New York City every fifth death is from tuberculosis of the lungs. He adds that in the Charity hospital o the city, 30 per cent. of all deaths show old lesions of tuberculosis, now become stationary. He quotes a Vienna hospital pathologist, to the effect that he finds similar old stationary lesions in 85 per cent. of all *post-mortem* examinations. This leaves but 15 per cent. who have not suffered from tuberculosis.

But our North West Indians furnish the most striking illustration of infection derived from cattle, and fostered in man by unhygienic surroundings. Dr. Treon, in the *American Practitioner*, describes the poor emanciated diseased animals furnished to the tribes; tells how the Indians eat the liver, tallow and entrails, raw and fresh; and how the carcase is dried, pounded, and packed in the skins to be eaten later without cooking. The meat is eaten, even though the animal may have died of disease. Dr. Holder, in the *Medical Record* (August 13, 1892), gives the Indian mortality from consumption as 50 per cent. of all deaths at Green Bay, Wis., Tulalip, W. T., and Western Shoshone, Nev. He says that at Lower Brulé, Dak., scrofula is present in 60 per cent. of the Sioux under 21 years, and that at Crow Creek, Dak., 50 out of a total Indian population of 1,200 die yearly of consumption and scrofula. Taken along with half as many deaths from other causes, this would kill the whole 1,200 in sixteen years.

These are extreme examples, it is true, in which the transmission and fostering of the disease by cattle is extended and aggravated by overcrowding and every imaginable unhygienic condition, among the human consumers.

(To be continued.)

Editorial.

THE ROYAL COLLEGE OF VETERINARY SURGEONS.

AT the Quarterly Meeting of Council, held on April 11th, it was decided that its proceedings are no longer to be published, and the profession is, consequently, to be left without an authentic and official record of the doings of those whom it has elected to administer its affairs and attend to its interests. This extraordinary blunder can scarcely be accounted for in any way, as we are not aware that anything has occurred to warrant such an unwise decision, and unless this inexplicable step has been adopted to mark the jubilee year of the incorporation of the Royal College, we are utterly in the dark as to the cause for it. Never since the obtainment of the Charter of Incorporation has the Council hesitated to keep the profession constantly informed of its transactions; and it was only through the publication of these proceedings in the professional periodicals that the members of the Royal College could learn how their representatives on the Council discharged their functions and maintained the welfare and dignity of the body corporate. In this the Council was only doing what was right and proper, and what every similar body is careful to do. The expense of publishing the proceedings could not be the reason for discontinuing their issue, as, we believe, the Royal College has never expended a farthing on their publication; this has been defrayed, so far as printing was concerned, by one of the professional journals. The cost of this was very trifling, and, we think, was not complained of until quite recently, when the Royal College was asked to pay for the setting-up of the report in type. We were also asked by the President, through the Secretary, if we would print the report, and in view of the fact that, in any case, this would have to be done for the VETERINARY JOURNAL, whether we received the reporter's notes or a proof slip (the additional expense being almost nil), we readily consented.

The cost of printing the proceedings of Council cannot surely be urged as an excuse for keeping the profession in ignorance of what is done and left undone in Red Lion Square; for large sums of money are spent on far less important matters than this, which would not entail the expenditure of more than a few pounds annually. Indeed, if the Council thinks it cannot afford to part with this small

sum, we are willing to undertake the printing and furnishing of the corrected proof slips for nothing, and shall have pleasure in doing so. We have at times been privileged to do greater service to the Royal College

But it is to be hoped that the very injudicious decision which has unhappily been taken will be revoked at an early opportunity, and that the Council will see fit to keep the members of the profession conversant with its acts and deeds. Secrecy by non-publication of its proceedings is certain to give rise to complaints and suspicions, and there is nothing but disadvantage to be derived from it. True, the professional periodicals might have special reporters at the meetings, each of whom would furnish his notes to the journal that deputed him; but this is not a very satisfactory mode of ascertaining what is done, and the information published in this way might be incorrect and unreliable. The Council should publish its own reports, under the authority of the President and Secretary, as heretofore, then there will be no occasion to consider them as incorrect, garbled, or mutilated and doctored to please the whim of some particular individual or party, especially as they would be open to correction by the Council itself.

The business of the Council should be duly printed and published for the information of those for whom it exists, and to whom it has entrusted its welfare; and it is earnestly to be hoped that this jubilee-year blunder may be immediately repaired and as speedily forgotten.

RABIES AND LEGISLATION.

THE Government is making another attempt to deal effectively with rabies, in introducing what is termed "The Dogs Bill." This is the title the Government have given to their measure for counteracting the spread of rabies. Briefly summarised, the Bill consolidates and amends the law relating to the seizure of stray dogs, the muzzling of dogs, the treatment of dangerous dogs, and the liability of the owner of a dog for injury done by it to cattle or sheep, and enables the Board of Agriculture and local authorities all over the country to require dogs to wear collars with the name and address of their owners. Under the general law, the police have no power to deal with stray dogs other than such as are supposed to be savage or dangerous. Under an Act passed a few years ago, the Board of Agriculture have required all local authorities to seize and deal with stray dogs, but in experience it has been found difficult for local authorities to act effectively in places where they are not the police authority. What therefore the Bill proposes is that the statutory powers of the Metropolitan Police, which are now limited to the County of London, should be extended to the whole of the Metropolitan Police District, and that similar powers should be conferred on all police authorities throughout the country. From 1886 to 1889 the Privy Council, and since 1889 the Board of Agriculture, have dealt with outbreaks of rabies

by orders under the Contagious Diseases (Animals) Acts, either by directly requiring dogs to be muzzled in certain places, or by enabling local authorities generally to impose the muzzle by regulation when necessary. Under section 3 of the Dogs Act, 1871, certain local authorities can impose restrictions on dogs, but this can only be done where a rabid or suspected dog is within the district of the local authority, and the restrictions do not extend to a dog which is under the control of any person. These limitations render the power of little practical use. The Bill of the Government proposes to repeal the provisions of the Act of 1871, and of the Metropolitan Streets Act, 1867, relating to muzzling, and to repeal and re-enact section 3 of the Board of Agriculture Act of 1889, so that in future muzzling will only be imposed by the authorities responsible for the prevention of the spreading of disease. The same clause of the Bill confers a new power on the Board of Agriculture and local authorities to require dogs to wear collars with the names and address of their owners, and removes a doubt as to whether the Board can require dogs to wear collars. It also removes a doubt as to the power to destroy unmuzzled dogs in Ireland. Clause 3 provides that if it is proved to the satisfaction of a court of summary jurisdiction that a dog is dangerous and not kept under proper control, the court may make a summary order directing the owner to keep the animal under proper control, or directing the owner, or a police officer, or some other person, to destroy it. It also provides that a police officer may destroy any dog found on a highway or place of public resort which is affected with rabies, or which he has reasonable grounds for believing to be affected with rabies, or to have been bitten by any dog or other animal affected with the disease. Then there is a provision taken from various local Acts as to the punishment of persons who allow ferocious dogs or dogs affected with rabies to be at large. The clause as to the liability of owners for injury done to cattle and sheep, dispenses with the necessity of proving the mischievous propensity of the dog, or a knowledge on the part of the owner of that propensity. The Bill is now in the House of Commons, under the charge of the President of the Board of Agriculture, who has every hope of seeing it passed through both Houses before the close of the session.

NEW HOBBLES.

Mr. Dudley James, M.R.C.V.S., London, has taken out a provisional patent for new hobbles for throwing down and restraining horses, and for which several advantages are claimed over those now in use. They are very light and not bulky, and they are also simple and reliable, only the best materials being employed in their manufacture; and as all the parts liable to chafe are

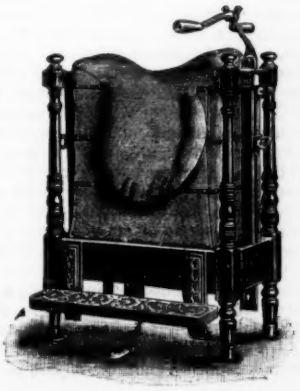
protected, they are very durable. India-rubber padding is also so placed as to prevent any injury to the animal on which they are fixed. Another important advantage they possess is that when once adjusted on the limbs

they will not slip below the knee or hock. The price is one guinea for complete sets of either casting hobbles, including four hobbles and the

casting rope; or double cross-hobbles. Messrs. Arnold and Sons, West Smithfield, London, are the sole agents for these articles.

The advantages these hobbles possess should attract the attention of Veterinary Surgeons, their cheapness, lightness and portability, as well as safety, being strong recommendations in their favour.

ARTIFICIAL HORSE-EXERCISE.



UNDER the designation of the Hercules Horse-Action Saddle, a machine has been introduced that is intended to act as a substitute for horse exercise for those who, owing to illness or other causes, cannot avail themselves of the live quadruped, and yet need the movement and exertion to restore or keep them in health. By an ingenious combination of springs, this machine so far imitates the movements of a horse, that in cases in which real equestrian exercise cannot be had, somewhat similar hygienic results may be arrived at by the use of the saddle. To the invalid whose liver is torpid, and who requires such gymnastic employment indoors, a course of riding on it must prove beneficial.

PLEURO-PNEUMONIA AND CANADIAN CATTLE.

One of the most destructive and harassing of the contagious diseases of animals is that commonly known as the "lung plague" or contagious pleuro-pneumonia of cattle, which was introduced into this country fifty years ago, probably from Holland, and during that period it has proved a very serious scourge to the agriculture and dairying interests. Until quite recently, however, scarcely any effective steps were taken to limit its ravages, and certainly there appears to have been no idea entertained as to eradicating it from the cowsheds and pastures. On the continent of Europe it had prevailed generally for many years before it reached our shores, but with its advent here so little was known of its nature or infectiousness that it was not long before we began to export it with our cattle to our most distant colonies, some of which, as Australia and South Africa, have suffered, and are now suffering, most cruelly from its effects. The United States of America were also favoured with several visitations from it, and though it has not been allowed to extend to every part of that great territory, yet it has proved a source of heavy loss and trouble to many of the States. Not long after we became acquainted with it Dr. Willems, of Hasselt, Belgium, discovered it to be an inoculable disease, and proposed the adoption of protective inoculation to limit its extension. This was the first step taken to combat the malady, but it was of little avail, and the measure received small attention on this side of the Channel, as it was adversely reported upon by an expert appointed by the Royal Agricultural Society to investigate it. This adverse opinion was probably based on the circumstance that inoculation with the virus of the disease did not produce the lung and pleural lesions characteristic of the affection; but there is ample evidence now accumulated to prove that the specific local disorder and general febrile condition induced by the inoculation confer immunity from the lung complaint; and that the operation is practised on a large scale in such places as South Africa and Australasia, where the more heroic but less scientific measure of wholesale slaughter could not be ventured upon.

The success attending the eradication of cattle plague and foot-and-mouth disease by killing all the infected animals and those in the locality which might have been infected by them, at length caused the legislature of Holland to attempt the extirpation of this no less formidable pestilence by the same procedure, and in a comparatively short time complete success was obtained. With such an example before her, England, which had been even more severely punished by the disease from Holland, determined to follow the same course and to drop the useless and embarrassing measures with which she had for some years trifled with the disorder, Unsparing slaughter of the infected and suspected animals, with compensation from the national exchequer to the cattle-owners, produced the same result as in Holland, and now there is reason to believe that the country will soon be rid of the contagion. The great cost and hardship entailed by this action of the Government rendered necessary the adoption of precautions of a severe and rigid kind against the reintroduction of the disease from infected countries, and the carrying out of these precautions has not been unattended by much opposition and disputation. Among the countries whose cattle were sent to our ports, and which were placed on the scheduled list as infected, was Canada. The cattle trade with that industrious, progressive, and very loyal colony is of much importance to it, and is also of some moment to the stock-feeders of this country; so that the prohibition of admission of Canadian live cattle, and their compulsory slaughter at certain ports were likely to cause some discontent on both sides of the Atlantic. This dissatisfaction has most unfortunately, been greatly aggravated on the Canadian side by the feeling that the severe measure applied to its stock is unwarranted, and that contagious pleuro-pneumonia has not existed, and does not

exist in any portion of the Dominion. The cause for the exclusion of Canadian cattle is that, among the thousand continually imported, now and again one or two in a cargo have been found whose lungs, when the animals were killed, offered the lesions which are deemed to be characteristic of the disease by the experts of the English Agricultural Department. But others who have inspected these lungs are of a different opinion, and assert with the most pronounced confidence that the animals could not have been affected by the specific disease, and that the lesions were simply those of broncho-pneumonia or some allied and non-specific malady engendered by insanitary conditions and exposure to hardship during the voyage across the sea. They also point out that these cases are quite sporadic, only on or two occurring in a cargo at wide intervals, and that there never has been any indication of general contamination, such as would certainly be observed if the disease was of a contagious nature. Still more striking, perhaps, is the fact that there has been no trace found of the disorder in the localities from which the diseased cattle were derived, nor yet, as has been said, in any part of Canada; and we know from painful experience that contagious pleuro-pneumonia when introduced into a country—and especially into one like Canada—speedily makes its presence felt on every side. The Canadian Government has taken every means to assure itself that the disease is nowhere to be found within its boundaries, and it has put into operation measures which shall guarantee its non-admission from the United States if these should chance to have it. It has also offered to defray the expenses of any experts our Government might choose to send in order to satisfy themselves of the exemption of Canada from this lung plague, an offer which has been refused.

It is not to be wondered at, therefore, that Canada feels rather sore at the treatment she is receiving at the hands of our Government, and that the subject has given rise to much correspondence, the language employed being sometimes energetic and even pugnacious. From a Blue-book just published containing this correspondence, we find that our Colonial Minister, the Marquis of Ripon, is inclined to adopt the view of the Canadians, and of those who, knowing the nature of the disease, can impartially judge what the facts should teach. In reply to a letter from the English Board of Agriculture, he says:—

"The experts of the Board have, of course, unequalled opportunities of observing and distinguishing the *post-mortem* appearances of this disease, and if it were not that these admitted differences exist, his lordship would have no hesitation in accepting their diagnosis; but the fact that such differences are acknowledged, appears to his lordship to raise a strong presumption against the views of these officers, especially when they are not supported by any evidence of the actual communication of disease by one animal to another. . . Nothing, moreover, has been advanced to show that the disease in question has been actually communicated by one animal to another, and, in the face of the admitted differences in the lesions from those of pleuro-pneumonia, the presence of causes specially tending to develop sporadic lung disease, and the strong negative evidence produced by the Canadian Government, Lord Ripon has great difficulty in accepting the view that it is merely a type of contagious pleuro-pneumonia, and that it is not a disease due to the hardships and exposure of the journey to this country. . . . As he (Lord Ripon) understands that the importation of store cattle does not usually begin till July or August, he hopes that the period of special examination which the Board propose to fix will not be extended beyond the middle of June, so as to allow time for making arrangements for that trade after the expiry of the period, if no further suspicious cases should be found. It must, however, be borne in mind that if the view maintained by the Dominion Government is correct, such cases may not improbably occur during the early part of the season, and

as the question of the nature of the disease cannot be advanced by further *post-mortem* examination, he proposes to suggest to the Dominion Government, that all cattle destined for this country should be carefully marked, so that they can easily be traced to the place of origin, and that in the event of any suspicious case being found, the herd from which it came should be slaughtered, not with a view to settle definitely whether the disease was of a contagious character or not." There is nothing unreasonable in this argument, and it is what anyone not specially biased would endorse.

For some time, also, questions on this very disputable matter have been put and answered in the House of Commons, where the Minister of Agriculture has done his best to defend the course he has taken, and to support the departmental experts, whose counsel he has followed. But he has been compelled to modify his views somewhat in the face of the facts laid before him, and which he could no longer ignore, and has therefore issued an Order (the Canadian Slaughter and Examination Order of 1894), stating that Canadian cattle may be landed only at certain wharves which are named; that there they shall be marked in a particular manner, and kept apart from all other cattle; that they are only to be slaughtered in particular slaughter-houses, such slaughter to take place during such time as the Board of Agriculture may from time to time direct; that they are not to be removed from the slaughter-houses without the permission of the inspector of the Board, and in no case are the lungs of these cattle to be taken away from the wharf until they have been examined by the inspector of the Board. This Order came into operation on the 15th inst., and it is to remain in force until the President of the Agricultural Department is satisfied that Canada is not an infected country, when he considers that he will be bound to dispense with slaughter at the ports, although some temporary regulations regarding the movement of animals after landing, will probably be requisite.

In considering this matter from a scientific standpoint, it is strange that there is no evidence to show that anything more that a simple examination of the diseased lungs has been relied upon in order to pronounce an opinion as to the nature of the disease. It is well known that inoculation with the fresh serum obtained from the lungs will produce effects which that derived from lungs affected with any other malady will not show. Surely this test might have been applied, especially as there was ample opportunity in each case for obtaining such material in a fit condition, the operation being simple, and the time required to obtain a result very brief. This is something more than an economic or international question; it is one of scientific evidence, which our protracted experience of the disease should enable us to solve, and no stone should be left unturned to solve it satisfactorily on one side or the other. The experts on both sides cannot be right, and medical science should be in a position to declare which side is in error, and so dispose of a dispute that has led to unpleasantness between this country and one of our most attached colonies.—*The Lancet.*

PROTECTIVE INOCULATION AGAINST ANTHRAX IN AUSTRALIA.

"It has been pretty generally known for some time past," says the *Narrandera Argus* (Australia), "that Mr. J. A. Gunn, of Yalgogrin station, has been experimenting with the object of perfecting an anthrax vaccine. The experiments have now been brought to a conclusion, and the vaccine is *un fait accompli.* Mr. Gunn's researches commenced some four years ago, being carried on by the aid of the best microscopical and other appliances, specially imported for his own use. About eighteen months ago vaccine of the required properties was obtained. Since then Mr. Gunn has devoted himself to making further experiments with a view to making assurance doubly sure. Having

satisfied himself of the entire effectiveness of his preparation, he submitted it, with duly authenticated reports of tests performed, to the Board of Health, which a few weeks ago granted Mr. Gunn a licence for the use of the vaccine in New South Wales. Mr. Gunn inoculated the Yalgogrin sheep about last November, the result being that losses from anthrax absolutely ceased. It was not his intention to do any other work this summer, but some of his neighbours induced him to operate on their flocks, with the result that he has inoculated this season some 24,000 sheep. The Warri sheep are amongst those treated. Mr. McMillan, manager of that station, writing to Mr. Gunn anent the effects of the inoculation on some vaccinated and unvaccinated sheep, states that while two unvaccinated sheep dealt with succumbed to the anthrax virus within thirty-six hours after its injection, the eight vaccinated sheep were alive and well at the time of writing, four days after inoculation. At Bolygamy station, on the Lachlan, 1,814 sheep died from anthrax in two months, out of a total of 13,000. Within a week of the first vaccination—as in the case of Pasteur's vaccine, two vaccinations are deemed desirable—death absolutely ceased amongst the flock, whilst a test similar in nature to that applied to Warri sheep had the same satisfactory results. In this case, it may be stated, a previous vaccination by another specific failed to counteract the effects of the disease. The vaccination of a flock in Victoria is now proceeding. It is probable that Mr. Gunn at an early date will devote himself entirely to the preparation of the vaccine and the vaccination of flocks, in which case he will establish a laboratory at either Albury or Wagga. The cost of the vaccination of sheep by the Gunn vaccine will be about 2d. per head."

VETERINARY MEDICINE IN SWEDEN.

In order to obtain the title of Veterinary Surgeon in Sweden, it is necessary to have undergone a course of study and been successful in passing the examination of diploma at the Stockholm Veterinary Institute. Before admission to this establishment, the candidate must be in possession of a certificate showing that he has obtained a high-class education analogous to the French *Baccalauréat.* In the Veterinary Institute the course of study extends to four years, each of which is divided into two terms—one from August 15th to December 15th, and the other from January 15th to June 15th. There are professors for instruction in anatomy and physiology, hygiene, and the management of the domestic animals, surgery and obstetrics, pathology and therapeutics, and histology, pathological anatomy, and bacteriology. In addition, there is a professor who gives instruction in botany, physics, chemistry, and pharmacy, while another is charged with the duty of instructing practically in the shoeing of animals.

In each province of Sweden the Government appoints and maintains a veterinary surgeon, while the provincial administrators and the agricultural societies in their turn nominate and guarantee a salary to a veterinary surgeon in every district.

At Skara there is a school for civil and military shoers; to this school is attached a hospital for domestic animals, in which is taught, practically, the treatment of the less serious diseases and accidents. The graduates of this school have the right to prescribe and sell in their pharmacies the remedies employed in veterinary medicine, but they cannot be officially employed as veterinarians, nor can they give certificates in outbreaks of epizootic diseases.

VETERINARY MEDICINE IN JAPAN.

The Japanese Veterinary College was established in 1875, and was at first attached to the Agricultural Academy, but ten years afterwards it was joined

to the Superior Agricultural and Forestry School, and the Veterinary students were assimilated with those of the Faculties. The diplomated graduates receive the designation of "Jani" (Veterinary Surgeon); but there is a higher degree conferred after an examination under Government auspices, which confers the right to the title of "Gakoushi" (doctor). In 1890 the teaching was reorganised, and Veterinary Medicine and Surgery now forms a sixth Faculty with Agriculture and Sylviculture, under the title of "College of Agriculture," the pupils receiving the title of "Nogakoushi" (doctor of Agriculture). Veterinary Sanitary Police and Care of Cattle are under the Minister of Agriculture.

The Japanese army has a corps of Veterinary Officers, which is directed by a veterinary surgeon who is attached to the War Office, and has the rank of a superior officer. Then there are divisional veterinary officers, who have the grade of major, and regimental veterinary officers, who rank with captains.

Veterinary instruction was, we believe, commenced in the Veterinary Institute at Tokio, by the late Professor McBride, who was sent out to Japan on our recommendation in 1875. After residing there for some years he returned to England, and was succeeded by M. Angot, who had been a veterinary surgeon in the French army. At the present time the teaching is in the hands of German veterinarians.

THE COMPANIONSHIP OF THE BATH.

In the list of Queen's birthday honours issued on the 24th ultimo, appears the name of Veterinary Lieutenant-Colonel W. B. Walters as a recipient of companionship (or Third Class) of the Order of the Bath. This well-deserved honour, for which he was recommended in 1887, and upon the receipt of which our esteemed colleague has our warmest felicitations, makes an addition to the small number of those who have been awarded the distinction in the veterinary profession; for the number is as yet only five, and none of them have got beyond the Third Class. Nevertheless, it is gratifying to know that members of the profession are no longer excluded from it, and that they are recognised as eligible, equally with other deserving servants of the country.

THE TESTIMONIAL TO PROFESSOR AXE.

We are requested to mention that the testimonial to Professor Axe, consisting of a service of silver and a bracelet for Mrs. Axe, will be presented immediately after the Annual Meeting of the Royal College of Veterinary Surgeons, in Red Lion Square, on the 6th inst. By the kind permission of Messrs. Mappin and Webb, the silver service will be on view at their establishment in Oxford Street, London, on the 4th and 5th inst.

Parliamentary Intelligence.

House of Commons, May 1st.

THE IMPORTATION OF CANADIAN CATTLE.

In answer to Mr. Maguire,

Mr. Gardner said: I propose that the special examination of the lungs of Canadian cattle should be commenced on the 16th inst., by which date the trade will have been resumed to an extent sufficient for the purpose. The lungs will be examined in the first instance by veterinary inspectors stationed at the ports, who will inspect them as soon as practicable after the slaughter of the animals. Any suspicious cases will be forwarded for examination by the veterinary officers of my department in London, whose reports will be

submitted to me for my personal decision as to the course to be pursued. I shall be quite willing to give the same full publicity to any further circumstances which may occur in connection with this difficult subject as I have done in the past.

PLEURO-PNEUMONIA.

In answer to Mr. KNATCHBULL-HUGESSEN,

Mr. GARDNER said: I much regret to say that it is the case that an outbreak of pleuro-pneumonia has occurred at Minster, in the Isle of Thanet. So far as our inquiries have yet gone they indicate that the disease is attributable to two cows brought to the premises from Hendon in August last, and there is nothing whatever to suggest that it was contracted from animals imported from abroad.

In answer to Mr. CHAPLIN,

Mr. GARDNER said: Until this outbreak there has been no outbreak this year.

May 6th.

HORSE DISEASE ON DARTMOOR.

In answer to Mr. MILDMAY,

Mr. GARDNER said: The inquiries I have made with regard to the prevalence of a parasitic skin disease of an infectious nature among ponies grazing on certain parts of the Forest of Dartmoor, suggest that the disease is similar to that reported from West Cornwall last year. In that case a special order was issued giving the local authorities certain powers with respect to animals affected with the disease, and I shall be happy to communicate with the local authorities for Devonshire with a view to ascertain whether it would be desirable that a similar course shonld be pursued in the present instance.

May 9th.

POLICE (SLAUGHTER OF INJURED ANIMALS) BILL.

Mr. BANBURY, in moving the second reading of this Bill, explained that it gave a police-constable, in a case where a horse was injured in the streets, power to obtain the certificate of a veterinary surgeon and to slaughter the animal on the spot.

The Bill was read a second time.

May 10th.

IMPORTATION OF CANADIAN CATTLE.

In answer to Mr. CHAPLIN, who asked a question in reference to the order permitting the importation of Canadian cattle,

Mr. GARDNER said: Nothing has occurred during the past three weeks which leads me to modify the statement I made to the House on this subject on the 23rd ult., and, with reference to the period of incubation, I may refer the right hon. gentleman to the reply I recently made to the hon. member for North Down, when I stated that some of the witnesses examined by the Committee of 1888 are said to have asserted that they had known cases of the development of the disease after no less a period than 15 months, but that no properly authenticated case of the kind was known to the veterinary officers of my department. The evidence of those officers before the Committee points to a very much shorter period as necesssary for safety.

THE IRISH VETERINARY COLLEGE.

Mr. W. JOHNSTON asked the Chief Secretary to the Lord Lieutenant of Ireland whether he had received a protest from the Irish Schoolmasters' Association against the proposed alienation of £15,000 from the funds at the disposal of the Commissioners of Intermediate Education for the endow-

ment of an Irish Veterinary College; and whether, for the reasons given in that protest, he would leave at the disposal of the Commissioners those funds which were absolutely necessary for the development of the intermediate education system.

Mr. J. MORLEY: I have received the communication referred to. But, having regard to the conditions under which Parliament has provided this money and to the results since its provision, I am clearly of opinion that no injustice can be done in allocating the £15,000 proposed towards starting a Veterinary College for Ireland.

BOVINE TUBERCULOSIS.

Mr. FIELD asked the President of the Local Government Board whether the report of the Commission on Bovine Tuberculosis was ready for publication, or when its issue might be expected.

Mr. SHAW LEFEVRE: I am informed by the Commissioners that satisfactory progress is being made with the report, which may shortly be expected.

Mr. FIELD: Can the right hon. gentleman fix a date, because I have been asking questions upon this subject ever since I have been in the House?

Mr. SHAW LEFEVRE could not add to the answer he had given.

May 25th.

CANADIAN CATTLE.

Mr. GARDNER, interrogated by Mr. CHAPLIN, said that the causes of diseased cattle being imported from Canada under the administration of the late Government, to which he referred on May 1st last, were those of five animals stated to have been imported from Montreal by the City of Lincoln in September, 1890. The particulars of these cases would be found in the report of the veterinary department for that year.

Mr. CHAPLIN: Is it not the fact that there was no evidence to show that these animals came from Canada?

Mr. GARDNER: Oh, no. My information is distinctly to the opposite effect. The papers at the office of the Board of Agriculture distinctly indicate that the animals did come from Canada.

In reply to a further question by Mr. CHAPLIN,

Mr. GARDNER said that the special examination of the lungs of Canadian cattle commenced on the 17th inst.

PLEURO-PNEUMONIA IN THE ISLE OF THANET.

Mr. CHAPLIN asked the President of the Board of Agriculture whether he was now in a position to state what were the circumstances connected with the recent outbreak of pleuro-pneumonia in the Isle of Thanet; and to what sources of infection the Veterinary Department of the Board attributed the contraction of the disease.

Mr. GARDNER: The outbreak in question occurred at a farm near Minster, in the Isle of Thanet. The usual measures were immediately taken to trace and slaughter the animals which had been exposed to infection, and upwards of 120 animals have thus been dealt with, of which seven have been found to be diseased. The inquiries are still proceeding, but as yet we have no reason to suppose that any of the animals which have been in contact with the disease have been removed out of the district. No further information has been elicited as to the origin of the outbreak, and I think there is not much room for doubt that the outbreak is due to the introduction of animals from the neighbourhood of London.

Mr. KNATCHBULL-HUGESSEN asked whether the right hon. gentleman had seen the report of a second outbreak in the Isle of Thanet,

Mr. GARDNER: I have seen no such report.

Army Veterinary Department.

Gazette, April 20th.

HONOURABLE ARTILLERY COMPANY OF LONDON.—D. R. C. Tennant, Gent., to be Veterinary-Lieutenant.

Gazette, April 27th.

MIDDLESEX YEOMANRY CAVALRY (DUKE OF CAMBRIDGE'S HUSSARS).—Veterinary-Lieutenant J. E. Jarvis resigns his commission.

FIRST NORFOLK VOLUNTEERS (EASTERN DIVISION, ROYAL ARTILLERY).—W. F. Howes, Gent., to be Veterinary-Lieutenant.

Gazette, May 9th.

Veterinary-Lieutenant F. Jocelyn to be Veterinary-Captain.

Gazette, May 15th.

Veterinary-Major C. W. Gillard, from half-pay, to be Veterinary-Major, to complete establishment.

Veterinary-Lieutenant F. C. Stratton is placed on temporary half-pay.

Veterinary-Lieut.-Colonel W. A. Russell arrived from India on April 24th on completion of tenure of office of Principal Veterinary Officer in that country, and will take up the duties of District Veterinary Officer, Woolwich.

Veterinary-Major J. Kettle has been transferred from London to Woolwich.

Veterinary-Major R. Rowe has been transferred from Woolwich to London.

Veterinary-Captain D. C. Pallin arrived from India on April 24th on six months' sick leave of absence,

Veterinary-Captain E. E. Bennett has arrived from Egypt, and been posted to the 4th Hussars at Aldershot for duty.

Veterinary-Captain J. Finlayson has arrived from Egypt on four months' leave of absence.

Veterinary-Lieutenant F. W. Sharpe arrived from India on April 27th, on completion of tour of service, and will be posted to Aldershot for duty.

Veterinary-Lieutenant F. Eassie has arrived in England on six months' sick leave, from India.

Obituary.

WE regret to have to announce the death of Walter Lewis, M.R.C.V.S., of Crewe, who died after a long illness on May 8th, the fatal termination being due to apoplexy. He graduated in 1856, and then commenced practice in the town in which he died, and in which he was held in much esteem. The local press testify to this, and the following remarks with regard to him are from that source : "Mr. Lewis was a Conservative in politics, and a Vice-President of the Conservative Association, but never took any active part in connection with political meetings. He was of a very retiring disposition, but the kind and courteous manner which he displayed in the discharge of his numerous professional duties endeared him to a large circle of relatives and friends, by whom his death will be deeply regretted."

The decease is reported of W. E. Lawrence, M.R.C.V.S., Durham, who graduated in 1887 ; and M. A. Browne, M.R.C.V.S., Wexford, a graduate of 1883.

We have received notification of the death, on April 22, of J. B. Taylor, M.R.C.V.S. Ashton-under-Lyne, aged 53 years. He graduated in 1862.

German veterinary periodicals announce the death of Dr. Hofmeister, Professor of Chemistry at the Dresden Veterinary School, well known by his

numerous writings on biological chemistry, and more particularly by a work he published in conjunction with Professor Siedamgrotzky, on "Chemical Analysis and Micrography applied to the Diseases of the Domestic Animals." This excellent little manual was translated into French by the late Director of the Brussels Veterinary School, Dr. Wehenkel, and Veterinary Surgeon Siegen. Mention is also made of the death of Dr. Froschauer, Assistant Professor of Pathological Anatomy in the Vienna Veterinary Institute.

Jurisprudence.

HORSE POISONED BY YEW LEAVES.

In the Queen's Bench Division, on April 26th, judgment in an appeal case, Ponting *v.* Noakes, was given. The defendant appealed against a verdict and judgment, given in the County Court of Andover, in favour of the plaintiff for the value of a colt, £22, alleged to have been poisoned by eating defendant's yew trees. The appeal was on the ground that there was no evidence that the colt had eaten of the defendant's yew trees, and that if it had it was through no fault of the defendant.

Mr. Justice CHARLES said the parties occupied adjoining fields, divided by a ditch and fence. On the defendant's land grew a yew tree, the branches of which projected over the ditch, but they did not overhang the plaintiff's land. At a distance of 20 yards was another yew tree on a Mr. Hunt's land, and 120 yards away yet another yew tree. The colt was found dead within five yards of the defendant's yew bush, and a *post-mortem* examination showed that the animal died from eating yew leaves. The defendant's yew tree and Mr. Hunt's showed signs of having been recently eaten. A veterinary surgeon, who gave evidence in the action, had known of a case in which a horse walked a mile after eating yew leaves, but that was exceptional, and mostly the horse dropped down immediately after eating yew leaves, or within a short distance. There was no evidence that the colt did not eat the defendant's yew leaves, but there was the evidence that the colt was found within five yards of the defendant's yew bush, the other two yew trees being respectively 20 and 120 yards away. But could it be said that there was any obligation on a man not to grow a poisonous tree so near his own boundary as to be accessible to the stock of his neighbours? or, if he did grow it, was he to take precautions against danger to his neighbour's stock? There was no liability on the part of the defendant to repair the fence, and he did not see how the defendant could be made responsible for the animal going on to his land. The colt received its injury through its intrusion. It had no right to be there, and the owner could not recover.

Mr. Justice COLLINS concurred, and said even though it had been proved that the colt had died from eating of the defendant's yew bush, it was shown that the animal could not have reached it without going beyond the edge of the ditch, which was the boundary of the plaintiff's field; and it would be a strange thing if a man who wished to grow a yew tree near his boundary must be under the obligation of varying the growth near his boundary to meet the varying use of his neighbour's adjoining land.

The appeal was allowed with costs, and leave for further appeal was granted, if notice be given within seven days.

WRONGFUL ASSUMPTION OF TITLE.

At the Clerkenwell Police Court on 25th April, before Mr. Marsham, W. Harris, of Gray's Inn-road, was summoned at the instance of the Royal College of Veterinary Surgeons for an infringement of the 17th section of the

Veterinary Surgeons Act, 1881. Mr. Thatcher, the College solicitor, prosecuted, and Mr. Cowdell defended.

Mr. THATCHER stated that the defendant carried on business in Gray's Inn-road and had a forge there, and that he displayed the words :—

"W Harris,
"Veterinary Forge. Late C. H. Arnold, M.R.C.V.S.L."

which, according to the ruling in the case of the Royal College of Veterinary Surgeons *v.* Robinson, which he cited, was an offence under the Veterinary Surgeons Act. He was about to call witnesses in support, when Mr. Cowdell objected on two grounds, both of which, after argument, were overruled by the magistrate. Evidence was then given in support of the opening statement.

Mr. COWDELL then said that the premises had formerly been occupied by a Mr. Arnold, Member of College, and that the defendant was his foreman. Mr. Arnold died some time ago, and the defendant had since carried on the business of the shoeing forge, and that a veterinary surgeon attended there occasionally, but defendant did not practise, and he said he should call the defendant as a witness, and also another person to prove that.

Mr. MARSHAM : I do not think you can call the defendant as a witness.

Mr. THATCHER : I am quite willing to take Mr. Cowdell's statement that the defendant does not practise. It is quite immaterial whether he does or not, the penalty is the same. What Mr. Cowdell himself has argued, shews the mischief of the thing; these unqualified persons use the words "Veterinary Forge," a veterinary surgeon goes there occasionally, people do not know when he is there or when he is not, but from the mere fact of his being there now and then, and from the fact of the words "Veterinary Forge" being displayed, they are led to believe that a qualified veterinary surgeon is always there. There is no doubt surreptitious veterinary practice is carried on to a large extent (though I do not say that the defendant has done it), and thus great harm is done, not only to the profession, which might be considered a secondary matter, but to the great body of the public generally, who are imposed upon, and whose animals are frequently very badly treated.

Mr. COWDELL : After the case that has been cited, my client will not further contest this. He received a notice from the College some time ago, and wrote in reply that he was going to put up a new board, but he has not had time to do it yet.

Mr. THATCHER : Here is his letter dated the 27th January, three months ago; the old board is there at this moment, I saw it on my way here.

Mr. MARSHAM : I think if the defendant had really meant to put up a new board, he has had plenty of time to do it. I shall fine him 40s. and 2s. costs.

On April 30th, at West Ham Police Court, London, Charles S. Eldred, of Ford Street, Canning Town, was summoned, before Mr. Baggallay, at the instance of the Council of the Royal College of Veterinary Surgeons, for using and taking an addition and description, stating that he was specially qualified to practise a branch of veterinary surgery, he not being on the register of veterinary surgeons.

Mr. GEORGE THATCHER, who prosecuted, said the proceedings were taken under the 17th section of the Veterinaries Act of 1881, which provided for a penalty not exceeding £20. The defendant on a signboard had the following notice :—"C. S. Eldred, R.S.S." (which meant registered shoeing smith). "Sick horses attended to. Horses carefully shod. Veterinary forge." The

words veterinary forge had been held, in a case in the High Court, to be an offence under the 17th section of the Act.

Mr. H. F. WEDLAKE, clerk in the office of the solicitor to the Royal College, briefly proved the fact that the board with the notice read by Mr. Thatcher was outside the defendant's premises.

The defendant said he had never represented himself as a qualified "vet," but if anyone came to him with a sick horse he would attend to it. He handed up his business card, on which was "C. S. Eldred, known as Charlie the Farrier," and an intimation that sick horses would be attended to "on the shortest notice."

Mr. Baggallay observed that if the defendant had stuck to "Charlie the Farrier," he would have been all right. It was clear he had held himself out as qualified to act as a veterinary surgeon, and for that he was liable to a fine of £20, but only a penalty of 40s. and costs would be imposed.

William Strickland, of Edward Street, Canning Town, was summoned for a similar offence.

Mr. THATCHER said this was a case of the same nature as the last. The defendant's sign was "W. Strickland. Veterinary forge. Horses carefully shod. Sick and lame horses attended to."

The defendant said he had never laid himself out as a veterinary, and that the painter made an error in painting "Sick and lame horses attended to."

Mr. Baggallay: You are responsible for the licence. A fine of £2 and costs was imposed.

Proceedings of the Royal College of Veterinary Surgeons and Veterinary Medical Societies, etc.

ROYAL COLLEGE OF VETERINARY SURGEONS.

As referred to in another part of the present Journal, we were unable to report in last month's issue the proceedings of the Council Meeting held on April 11th, owing to the extraordinary decision arrived at on that occasion. To a member we are indebted for an account of what occurred, and the following abstract contains, we believe, the chief incidents of the meeting.

With reference to the proposed Irish Veterinary College, the President stated that at an interview with the gentleman who is moving most actively in the matter, he was assured that a clause in the application for a charter, asking for power to institute a Fellowship degree, would be expunged, and that the school would be only a teaching one affiliated to the Royal College of Veterinary Surgeons.

The report of the Finance Committee contained a recommendation that £100 be granted for the Annual Dinner expenses in consequence of this being the Jubilee Year. This was agreed to.

A discursive discussion ensued on the printing and publication of the Council's proceedings, when ultimately Professor McFadyean moved that "the Council do not print the minutes"; this was seconded by Mr. Mulvey and agreed to, though evidently under a misapprehension on the part of several of the members.

On the report of the Registration Committee being read, the College solicitor's opinion was quoted, to the effect that until the Council passed a resolution that professional advertising was unprofessional, it could not be dealt with under the Veterinary Surgeon's Act. After discussion, it was moved and carried that the Council views advertising as disgraceful from a professional point of view.

The Examination Committee's report was read, in which it was recommended that in future figures were to be substituted for the terms hitherto in use to indicate the students' merits. It was moved and ultimately carried, after considerable disputation, that students who obtain an aggregate of not less than 40 per cent. of the marks in the written and oral examination, shall be deemed "sufficient"; students obtaining from 70 to 85 per cent. shall be marked "good," and those with more than 85 per cent. are to be considered "very good."

The subject of the examinations was considered, and after fixing the dates when the written and oral examinations were to take place, a discussion arose as to the length of time a student should be examined at the practical examination; it would seem that it was decided the time was not to be less than half-an-hour, or more than one hour, on each subject.

The election of an examiner in morbid anatomy, and another in practical horse pathology, gave rise to a discussion as to who were eligible to act as examiners, some of those who were proposed not being Fellows of the Royal College; Mr. Wolstenholme, F.R.C.V.S., and Professor G. Sims-Woodhead, were eventually elected.

Auditors and scrutineers were appointed, and several notices of motions were given, when a proposal was made that the Royal College should publish a pharmacopœia; this was negatived.

We cannot vouch for the accuracy of this brief and unauthenticated abstract.

THE CENTRAL VETERINARY MEDICAL SOCIETY.

An ordinary general meeting of this Society was held on April 5th at the Royal College of Veterinary Surgeons. Mr. A. Prudames, the president, occupied the chair, and the other Fellows present were: Messrs. W. J. Arkcoll, R. Butler, A.V.D., C. H. Cordy, Jno. A. W. Dollar, J. Sutcliffe Hurndall, Prof. F. Hobday, R.V.C., Prof. Macqueen, Prof. McFadyean, F. C. Mahon (Hon. Sec.), J. Mulvey, Professor J. Penberthy, P. McOnie, W. O. Reddish, H. G. Rogers, A. Rogerson, J. Rowe (Hon. Treasurer), F. Raymond, A.V.D., F. Samson, W. Stapley, Hugh Singleton, W. H. Williamson, W. Willis, F. Oxford, L. Walpole, F. W. Willett, and as a visitor Mr. Morgan Evans.

After some correspondence had been read, Mr. H. H. Whitlam Smith, M.R.C.V.S., London, was elected a Fellow, and the following were nominated: W. Robertson, M.R.C.V.S., Edinburgh; C. J. Reakes, M.R.C.V.S., Orpington, Kent; J. H. Manton, M.R.C.V.S., London; C. R. Edwards, M.R.C.V.S., London.

A letter was read from the Midland Counties Society proposing that the Central Society should join it in returning candidates for the Council R.C.V.S. It was decided that the Society was agreeable to do so, but would not pledge individual members.

A letter was read from Mr. Edgar proposing that Messrs. Hurndall and J. A. W. Dollar be the nominees of the Society as members of Council R.V.C.S. at the forthcoming election. The proposal was accepted, and Messrs. Hurndall and Dollar expressed their views.

A discussion ensued, on a breach of professional etiquette, in reference to ophthalmic surgeons treating a dog's eye, and it was decided to allow the subject to drop, thanks being given to Mr. Hurndall for his action in the matter.

Thanks were awarded Veterinary-Captain Raymond for his services as a Member of Council of the R.C.V.S.

Needle Firing.

At the previous meeting Veterinary-Lieut. Butler introduced some matters

of clinical interest, producing and explaining specimens and photographs, but his remarks were not reported, in compliance with his request.

Professor MACQUEEN, who had moved the adjournment of the discussion which ensued, now avowed that he was unable to resume the discussion because Mr. Butler's remarks had not been printed. He regretted that no report had appeared. It was difficult a month after a meeting to remember what had been said. He desired, however, to refer to the origin of what was called "Needle Firing." So far back as 1836, the first sharp firing iron was introduced by a French veterinarian, Urbain Leblanc. The iron was a conical one, not unlike the one which Prof. Macqueen exhibited. In 1864, Abadie somewhat improved upon the original, and produced an iron, a copy of which Professor Macqueen also exhibited. It was a very sharp puncturing iron. A year or two later Bianchi invented the needle-firing iron, with fixed needle. Many other needle cauteries were introduced between 1865 and 1874. It was found that the shoulder of Bianchi's iron damaged the skin, and this was considered a very serious objection. Watrin, whose name is connected with a patten shoe, suggested that something should be placed between the shoulder and the skin, and recommended a perforated disc. In 1879 the iron, of which that shown by Captain Butler was a pattern, was introduced by Bourgonet. In this cautery the disc was replaced by a fork, and there was the further difference, the needle instead of being fixed as in Bianchi's iron, was movable. In France, Bourgonet's iron was considered more ornamental than useful, because of the trouble in heating and changing the copper points. The only objection to Bianchi's iron was that the shoulder had to be kept from the skin. As to the depth of puncture, Leblanc (1836) recommended pushing the iron through the skin and subcutaneous tissues, into the bone, in cases of splint, spavin, ringbone, sidebone, and other bony enlargements. Leblanc stated that it was not good practice to push the iron into the bone at one thrust. It should be done gradually. Professor Macqueen had used these irons, and could speak favourably of the needle-firing iron for sprains of the flexor tendons, for spavin, splints, and ringbones. The iron was pushed well in. He did not use any disc but withdrew the iron very quickly. Abadie's iron was a very good one, but it made rather too large an opening. In concluding, Professor Macqueen said he thought Prof. Hobday would be able to give them a little information of the results of the application of the iron (Bourgonet's invention) of which he, Professor Hobday, tried a pattern.

Professor HOBDAY gave particulars of four cases in which he had applied Bourgonet's needle-firing iron at the free clinique of the Royal Veterinary College. In the first case, one of a large spint where the horse was very lame, he made six punctures and afterwards blistered. The animal returned thirteen days afterwards very much improved, so far as its lameness was concerned. He had not seen the horse since. This he regarded as rather a favourable sign, because the owners of the patients at the free clinique as a rule returned to express their dissatisfaction if the case did not progress satisfactorily. The second was that of a cart horse, a very bad case of sprained tendons. The animal had been line-fired once and blistered twice, and was still very lame. About twelve punctures were made, one row down the centre and back of the tendon, and one row on either side. The horse was afterwards blistered. It came back eight days afterwards decidedly improved. Twelve days subsequently the animal returned very lame. This was owing to its having meanwhile been at work, contrary to the instructions he gave. In the circumstances he advised slaughter, and had not seen the horse since. The third case was that of a large ringbone in the hind foot of a horse. He did not here give a favourable prognosis, but the owner wished every attempt to be made to render the animal serviceable. It returned three weeks afterwards showing no improvement. The last one was a very bad case of sprained

tendon in a cob. Twelve or fifteen punctures were made, and afterwards blister was applied. The animal was very lame, but when it returned nine days afterwards there was a decided improvement. Unfortunately, however, it had broken loose and grazed the parts operated upon, which somewhat retarded progress. Three days afterwards there was certainly an improvement, but he had not seen the horse since, and so could not say definitely how it progressed. In three of these cases the operation was performed standing and in the other whilst the animal was cast. He did not consider the results of these cases to be very reliable, because the free clinique patients were usually worn-out emaciated animals, were very badly diseased, and their owners were, as a ruel, careless and would not take the trouble of looking after their animals. He did not experience the difficulty mentioned by Professor Macqueen concerning the heating of the copper points. One heating of the iron would produce sufficient heat in the needle to suffice for five or six punctures. Another difficulty with which he had to contend was that, so far as the free clinique was concerned, the animals had to walk away to their homes. He certainly thought that if the animal operated upon were put in slings at once and kept thoroughly quiet, progress would be greatly facilitated.

Mr. W. STAPLEY spoke of the marked improvement he had himself witnessed in a cart-horse which had been fired by him with the needle-firing iron. The iron was heated in a charcoal fire at a forge some eighty yards distant from the scene of the operation, to which it was brought as quickly as possible, and it did its work so rapidly that a very extensive surface was fired with once heating. Care was required in the operation. He thought a charcoal fire was best. As Mr. Butler said, the points were easily bent if they were bent once before, but this could be rectified by means of a pair of pincers. The method of operating required care, because if one did not put the puncture in the proper place, he might penetrate a blood vessel.

A vote of thanks was accorded to Lieutenant Butler for the remarks he made at the previous meeting and the instructive specimens he brought before the Society.

Lieutenant BUTLER, in acknowledging the compliment, said he had particularly requested that his address should not be reported, as the materials he brought were got together hurriedly from his friends. He simply came forward to stop a gap for a few minutes, and brought with him whatever came to hand. Moreover he did not wish to be reported because on previous occasions his remarks had not been as correctly reported as they might have been.

Fistula of the Horse's Foot—Quittor.

Veterinary-Captain RAYMOND: Under this heading I propose to relate a case which might wear the somewhat more ambitious title of septicæmia or progressive tissue necrosis. The peculiarity of the case seems to be that although it was well cut out and a depending orifice secured, it progressed badly, and was ultimately destroyed.

On the 10th January a horse, 11 years old, while at exercise on some stable litter, picked up with the off-hind foot the heel tip of a man's boot. One part penetrated the foot on side of the frog for about two inches, the other went into the sole in front of the frog. The accident was noticed at once, and a shoeing smith removed the piece of iron. The foot was soaked in warm water, and the animal was soon afterwards sent to me in a float.

I had the surrounding horn pared very thin, and a good opening made for any discharge that might come away. The foot was thoroughly cleansed, and a carbolic water poultice applied.

January 11th. The animal was doing well, the openings were free. Poultice repeated.

12th. The openings were free, the case doing well. The foot was placed in an antiseptic bath for an hour, and a carbolic poultice applied as before.

13th. The animal was in pain; temp. 105·3° A small abscess appeared in the thin horn, about half-inch from the hole in the frog. This little abscess turned out to be a local affair, but I removed the horn round it, and made one wound of the original puncture in the frog and it. The discharge was not the usual laudable pus, but of a rather watery description. The foot was bathed for some two hours in warm carbolic lotion in a foot bath, and a carbolic poultice applied.

14th. Temp. 103°, animal in pain. The opening in the sinus in the frog would admit a black lead pencil, and a probe showed that it was free for about two inches to the back of the coronary bone. The hole in the sole was slightly underrun, and so I removed a quantity of horn in its neighbourhood, and nearly all the horn from the punctured side of the frog. This was not absolutely necessary, but it was done so as to be on the safe side. The discharge was rather watery than purulent, and was free from smell. This was probably due to the carbolic baths and other antiseptic precautions.

15th. Temp. 102·2° Same symptoms, same treatment.

16th. Several small abscesses formed, and burst on the coronets in the region of the inner lateral cartilage (same side as original wounds). The tissue under them was in a disorganized condition. I searched for a communication or another sinus, but found none. I joined these abscesses, and dissected out the disorganised tissue. Gave the carbolic bath for one hour, dressed the reachable parts with iodoform, and applied a dry dressing of carbolic tow. The circulation in these parts was not very good, there was not much bleeding, and the wounds were not rosy in colour.

17th. Temp. 100·4. A small abscess burst at the back of the lower end of the long pastern and some stringy disorganised tissue protruded. Cast and chloroformed. Enlarged this abscess, and removed a quantity of stringy tissue by dissection. I gradually introduced my little finger into the sinus in the frog, which had gained in diameter, and found that it led to a cavity at the back of the tendon. There was stringy tissue here. I joined the abscess and the sinus by a drainage tube, after washing out and dissecting away the necrosed tissue. A communication had formed between the abscesses I treated the day before and the abscess in the heel, this sinus containing necrosed tissue was cleared, and a drainage tube inserted. Some more abscesses formed on the coronet in advance of the old ones, and reached to the toe. I joined them and dissected out the necrosed tissue. At the end of the operation all these wounds appeared to be clean, they had the usual carbolic foot bath, followed by iodoform and carbolic tow, etc.

18th.—Temp. 103·4°. Abscesses formed and burst from the toe to the outer quarter, and there is a sinus between an abscess near the anterior edge of the outer lateral cartilage and the abscess in the heel. So that the whole coronet was implicated. I opened the abscesses near the toe, dissected necrosed tissue, and put a drainage tube in the new sinus. I used drainage tubes so as to save the skin as far as possible. The necrosis seemed to be steadily progressing in all the wounds; in spite of dissection and antiseptics, the diameter of all the sinuses became daily larger.

19th.—Temp. 104°. A patch of skin showed signs of sloughing just above the fetlock. The same necrosed tissue was in all the wounds; a finger could be easily introduced into all the sinuses. There was no smell, the discharge was watery rather than pustular, and there was not much of it. The animal in great pain. In consultation with Major Rowe we decided to destroy the animal.

Remarks.—The questions which have occurred to me are whether the course of the disease was influenced by thrombosis of blood-vessels which

caused a defective blood supply and subsequent necrosis? There was little blood in the parts after the first few days, and the wounds did not look rosy. Or was it a case of infection by a germ of progressive tissue necrosis?

Koch mentions such a germ as being fatal when inoculated in mice. There is also a germ of gangrenous mastitis which attacks sheep. And I read the other day in *The Veterinarian* that a gangrenous condition is set up in whales by Norwegian fishermen by harpoons.

The absence of smell during life appears to have been due to the antiseptics used. Vet.-Major Rowe, who has had large experience in South Africa, has informed me that gangrenous condition of the legs of mules in South Africa during wet weather was very common; and he has seen cases where wholesale sloughing of the parts below the knee have occurred.

The question of individuality in these cases may not be altogether without interest. It seems possible that some animals are less resistent to injuries than others. Sometimes an animal picks up a rusty nail, the wound receives scarcely any treatment, but the animal gets well almost at once. In other animals, with more careful treatment, suppuration, an under-run sole, and quittors occur. I can call to mind two cases of injury to the coronet caused by a gun wheel. In one case there was no wound, but sloughing and quittor resulted; in the other the injury must have been very great, for the horse's shoe was doubled so that the heels crossed one another; but in this case, although there was a wound, no sloughing whatever occurred; the animal was lame for some time.

Mr. DOLLAR, remarking upon a statement of Captain Raymond's that very frequently cases of a non-fatal character occurred in which much greater injuries were inflicted than was the case here, said he thought that the explanation of this might be furnished by the fact that any suppuration of the foot was not invariably caused by one and the same factor; that there might be a very extensive laceration and injury to the structures, and yet comparatively early recovery. Still, on the other hand, they might have a comparatively small wound and yet the most serious consequences. For instance, tetanus following a wound usually resulted in death. He thought the varying course that wounds of different characters took was due to the various characteristics of the organisms which entered. Captain Raymond asked for a possible explanation of the reason of the spreading gangrene in the case he mentioned. It would be interesting to know whether the circulation, whilst impeded in the foot itself, continued in the upper portion of the limb, and whether any circulation in the limb took place in the tissues prior to the necrosis. How long were the carbolic baths continued? In another case, would it not be well, in trying to bring about better results, to use entirely dry dressing and double cyanised gauze?

Professor MACQUEEN said with regard to the treatment that Captain Raymond pursued, he did not agree with him in the use of carbolised baths. Moisture of that kind he did not consider beneficial. From the Captain's description the case seemed to be a rather exceptional one, and therefore he was not surprised at the result. It became a constitutional disease from being a local one.

Captain RAYMOND, replying to questions, said neither the pedal or any other bones were injured. Mr. Dollar spoke about double cyanised gauze. If one could only get single cyanised gauze he would be fortunate. He used to get a little carbolic gauze at one time, but even that had been cut down. Professor Macqueen, in mentioning drainage tubes, raised a very large question and one which might be discussed for twenty-four hours. (Professor Macqueen: drainage tubes in quittor). That would not take quite so long to discuss. He thought that drainage tubes under certain circumstances were useful. In this case he tried two things, drainage in one part of the foot and

incision or blood-opening in another, and he was bound to say that the result in both experiments was the same. The reason he used carbolised baths was in order that the horse, by using his foot, should keep washing out the sinuses as far as possible. He was not prepared to defend these baths very strongly. Their president, he knew, used to treat quittors many years ago by inserting into the wound corrosive sublimate wrapped up in cigarette paper. No doubt that was a most useful way of treating quittor, and he (Captain Raymond) had seen cases in Mr. Prudames' hands recover very rapidly. Another treatment of quittor was that adopted by Mr. Woods, of Wigan, which consisted of the injection into the sinuses of a mixture of camomile and acetic acid, and he (Captain Raymond) had found that that treatment had extraordinarily good effects sometimes.

Mr. SAMSON moved a vote of thanks to Captain Raymond for introducing the subject of quittor as exemplified in the case he had instanced.

Mr. ROGERSON, in seconding the motion, said he had treated many cases of quittor in his time and his experience taught him that the drier the foot was kept the better. He thought that after the first relief, after a proper opening had been made for the discharge to escape, the less poultices and moisture applied to the foot the better would be the result.

Cæsarian Operation on a Cat.

Mr. ROWE described an operation of this nature which he had performed. A small cat of a very vicious temperament was brought to him by his friend, Mr. T. Moore. It was the valued property of two ladies. After considerable difficulty, during which he was bitten and scratched although his hands were well covered, he succeeded in trying the passage and found there was no chance of removal of the fœtus. So the case was abandoned as hopeless, and its owners were so informed. The next day he was requested to use every effort, and if necessary to cut the cat open, in order to extricate the dead kittens. After half-an-hour's trouble he succeeded in getting the cat sufficiently under chloroform to enable him to examine her, when it was found to be a breech presentation with only the tail in reach. His instrument partially removed that and the viscera, but nothing more, so it was decided to operate, and a median line was selected, and in less than ten minutes, after a nearly bloodless operation and after having ligatured the parts, the whole of the uterus was successfully removed by the ecraseur and the parts sutured up. The cat fast recovered consciousness and was as vicious as ever. This was at four in the afternoon. It was taken away home at eight o'clock. The subsequent history was that the cat was nursed during the night and ate and drank well, also in the morning. About eleven in the forenoon, however, after drinking she vomited, walked across the room to the fireplace, laid down on the hearthrug, stretched herself, shivered and died almost immediately. No *post-mortem* examination was made. There were two large fœtal kittens, one larger than the other, and an immature fœtus.

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

(*Continued from page* 378.)

AT the outset I should like to admit that the professional conscience is very elastic. A large number of surgical cases, both physiological and pathological fall to the lot of almost every veterinarian. It is to the credit of the profession that so many of its graduates can operate well, the absence of large central hospitals presided over by expert surgeons and the difficulty of transporting our patients, render it necessary that most men should operate for themselves. This very fact, although it has a tendency to make expert operators, has also the tendency to make them less considerate of the sufferings of their patients. I do not wish to be misunderstood. I mean that under the pressure of a

heavy day's work, a man is inclined to minimize the probable suffering of a patient when he considers the extra time and care which would of necessity be expended if the animal received an anæsthetic. The argument is, it will not take long, it will be quickly over, it will be hardly *worth while* to give chloroform. In professional correspondence upon this subject, attempts have been made to cast the blame, for the infrequent use of chloroform, upon the owners of animals, indicating that they do not care to bear the extra cost. I believe that to be a libel upon the vast stock owning population of the country, and unhesitatingly affirm that a humane veterinarian will make humane clients. Of course the present are "hard times," but then times have always been hard, and a man who is only humane when the sun shines needs an infusion of the "milk of human kindness," which can often be injected successfully by a skilled veterinarian.

It is encouraging to note the steadily increasing use of anæsthetics throughout the country in all severe and necessarily painful operations, which denotes an earnest solicitation for the avoidance of pain. It is to be regretted that some members of the profession openly discourage the use of anæsthetics, and others advocate operating in a position in which it is impossible to employ them. When chloroform and ether are more freely used at some of the teaching institutions, the students will probably retain a more favourable opinion of their value in after life. I am informed by one who was present, that an operation was performed one day last week at a public institution, the animal was on the casting bed for two hours for the removal of a bi-lateral scirrhous cord. It received no anæsthetic!! and died four hours after from nervous exhaustion.

No wonder men try to believe that animals do not suffer pain. It has been well said "the tender mercies of the wicked are cruel."

To leave our subject here, would be to place on record a sombre picture without a gleam of sunshine to brighten the dark vista of sorrow and pain. I confess to being one of those who accept the beneficent influence of pain, although I have often and often stood mystified in its terrible presence in the death struggles of animals with rabies, tetanus, gastritis aud other painful maladies.

If I must attempt to answer what is pain? I say the *great conservator* of the animal world. Its higher influence upon man cannot be overlooked, for it certainly performs to him a far more than protective or didactic function. Many of the noblest traits in human character would remain undeveloped, unstimulated, but for the presence of suffering in our midst.

This subject was under discussion a few years ago in *The Lancet*, and one gentleman who ventured to state that pain was *invariably* beneficent, found an only supporter in the editor of that journal. One of his critics penned the following respecting that view of pain:—"It is too late in the day to attempt to prop up a theory of the invariable and direct beneficence of pain, shutting the eyes to facts to save a teleological theory which experience and reason have alike discredited. To a reverent believer in evolution, pain is more nearly comprehended in its true light and meaning, and much of its sting removed in proportion to that comprehension. The gradual growth of the nervous system from the early dawn of consciousness—the mere sense of externality—up to the delicate and impressionable susceptibility from which we derive all that is best and noblest, has proceeded under the direction of a natural process of selection, and eventuated in the fittest's survival. It has thus come about that the advantage in the race which the sharp reprimand of pain on danger's approach bestowed has, with the intensified susceptibilities which we prize, also afforded us increased possibilities and opportunities of suffering. Here there is to be found the comfort which science affords—comfort in the knowledge that pain is in obedience to law, is bound up with

the progress of the race. With this knowledge and with this hope, far more than with blind assertions as to the invariable beneficence of pain, one can 'kiss the rod' and be patient in pain, though as quick as a sensitive plant to the touch."

The foregoing represents a line of thought attractive to some minds. It certainly savours more of the laboratory than the sick chamber. It is somewhat doubtful if any man racked with pain ever found much comfort in the fact that it was the high development of his nervous system which enabled him to appreciate it. That "pain is in obedience to law" must be generally accepted, but it is another step to recognize a founder of that law—a creator of life.

If pain is the outcome of violated law, it is difficult to see how it can be otherwise than beneficial. There is a considerable chasm between the possibility of pain being beneficial and our ability to recognise it. The beneficence may be not so much worked out in the individual suffering pain as in those who are eye-witnesses of it. What a magnificent stimulus it has been in the progress of medicine, surgery, and invention. Pain has stirred up noble men to devote their time and skill to its alleviation, both in their own species and in animals. Man early devised protective covering for various parts of his body as a preservative against injury and pain caused thereby. Anodynes and anæsthetics are a boon to the suffering world, discoveries the outcome of pain. The didactic influence of pain is manifest in men and animals who cannot reason. They are taught to avoid an injurious agent, having once experienced pain through it. Its protective influence is a benefit alike to all animals. The sensation of pain is a warning of injury to some part, and likewise a cry for its removal. The comfort of the animal and the future function of the organ or tissue may be involved. Disease without pain might make rapid strides before discovery or the application of a remedy. Pain is conservative to the tissues, as it causes an animal to seek quiet, rest, warmth, protection when a part becomes injured or inflamed.

A good example of this is seen in a horse, the subject of navicular arthritis. The animal by an alteration of gait and pace will expend less force upon its feet, and thus spare itself pain. If the nerves of the limbs are divided, the animal—unable to reason what the consequences will be—again puts all its weight and force upon the diseased parts, and if it is an advanced case, they may break down. After recovery from a sprained tendon or inflamed bone, the pain being absent, an animal will freely expend all its proportionate force upon it—result—sometimes a relapse. While the pain lasted, it preserved the weakened tissue from unsafe use.

The beneficence of pain in domesticated animals is manifested as much in its effect upon man as upon themselves. It enables him to become their helper. Veterinary science would be impotent but for the presence of pain. It stands out in many diseases beyond all other symptoms as an aid to diagnosis, and as a measure of the severity of injury to the tissues. It is needless to enlarge upon a point so well known to all.

If animals other than man are not sharers with him in what may be called the higher advantages and purposes of pain, they fortunately escape most forms of intensification due to imagination and prospective reasoning, which add much anguish to human suffering.

If in the foregoing pages I have in any way unduly magnified the claims of animals to our sympathetic consideration, I plead as an excuse thirty years' intimite association with them, twenty-two of which have been spent in attempting to alleviate their sufferings which they inherit as a part of the death penalty, common to us all.

"Large bounties to bestow we wish in vain,
But all may shun the guilt of giving pain."

The PRESIDENT thanked Professor Edgar, on behalf of the Association for the trouble he had taken in preparing the very interesting paper for them. It was full of thoughts and he hoped it would be discussed at some future meeting of the Association. He was afraid time would not permit of its being adequately considered that day. With Professor Edgar's permission to suggest that the discussion of the paper be adjourned until next meeting,

Mr. J. B. NESBIT seconded the proposal, which was accepted.

Professor MCCALL said he had been requested by their worthy Chairman to make a few remarks upon Professor Edgar's paper. He need scarcely say that he had great pleasure in doing so. He understood that the paper had been put before them for the special purpose of proving that the lower animals were sensitive to pain. No one who had had any practical experience in the treatment of the diseases of the lower animals could do otherwise than endorse that belief. He would go the length of saying that he thought the sensitiveness of the lower animals to pain was only to a very slight extent modified to that which they themselves experienced. In the inflammation of enteritis everyone knew the amount of suffering and pain endured by a horse. He thought it was comparable with that experienced by a human subject under the same circumstances. In a human subject with that disease which they in Scotland called whitlow they saw the effect of pain upon even a giant constitution. The most powerful man by the pain under the nail is rendered as helpless almost as a little child. By the slightest touch or impression on the part affected one might lead the individual. Identically the same thing they experience in horses. He gathered from their friend that he had a very strong desire to see chloroform administered in all cases in which they were required to perform an operation of what they generally termed "firing." He had had an experience of upwards of forty years in the treatment of disease of the lower animals and was sure he had "fired" hundreds of horses. In only one case out of a hundred had he had recourse to the administration of chloroform. Far more depended upon the manner in which the firing-iron was used by the veterinary surgeon than upon the sensitiveness to pain of the animals themselves. He did not care how stupid and dull a horse was he could make him suffer intense pain and resist the operation. But on the other hand he could perform the operation in such a way that the animal would not wince or show any resistance at all. His method of firing horses was one he had had from the very first. It was not a method generally pursued. The method generally pursued, and pursued by a great many of those who thought that chlorofoim should be administered, was as follows: The iron was applied slap down upon the part affected, and then after being allowed to remain was drawn along. That was not the method to his mind; his advice was this. Take the firing iron in your hand and just apply it as gently as possible, merely singeing the hair; go over the whole field singeing the hair; go back again, and back again, and if you do it in this manner you may fire the horse almost down into the bone and in a great many cases he will never lift his foot. He was quite prepared to fire any horse without anything further than a blinder. If he could do that and have the whole thing over in a few minutes he thought he had behaved in a more humane manner than it he had put the horse under chloroform. He would be the last man in the world to throw any obstacle in the way of or discourage anyone in the use of anæsthetics in certain cases. With the general tone of the paper submitted to them he entirely agreed. He appreciated also the manner in which it had been given. It was a paper which reflected very great credit upon Professor Edgar. He hoped what he had said would not induce anybody to believe that he for one would not administer anæsthetics. If he had an operation such as Professor Edgar spoke of, where the horse must be under the operation for a long time, where there was a considerable amount of pain and suffering and where the safety of

the operation depended upon the quietness of the animal, he certainly would have recourse to chloroform.

The meeting then adjourned.

The Dinner.

Subsequent to the meeting a large company of members and invited guests sat down to dinner at the same place. The President occupied the chair.

The CHAIRMAN gave "The Queen," and the "Prince and Princess of Wales and the rest of the Royal Family," both of which were loyally honoured.

Mr. J. W. T. MOORE proposed the "Army, Navy, and Auxiliary Forces." He said this toast was always received at gatherings of this kind with great enthusiasm. He was not able to bring anything very special before their notice with regard to the army, because, fortunately, it had not been engaged in any warfare. He was sure they were all sorry for the fate which had befallen Major Wilson and his party. All he could say on behalf of the army was that they had every confidence that they would behave in the future as in the past—like British soldiers. With regard to the navy, he maintained that it was of the greatest importance that England should command the seas. He quite agreed with the policy of the present day—of keeping up and adding to the naval power. If a foreigner built an ironclad, England should build two. With regard to the auxiliary forces, he thought that, if necessity required, we would find them practically unanimous in coming forward to defend our shores. He asked them to drink to the army, navy, and auxiliary forces, coupled with the names of Major Durrant, Mr. Hunter, and Mr. Elphick.

Major DURRANT thanked the proposer of the toast for having coupled with it his name. He also thanked the company for the way they had received it. It was gratifying to him to find that wherever they went people had great confidence in the army. Certainly, we had not been beaten for some years. He remembered, however, an action in which he was engaged and in which the English were beaten; but that was thoroughly owing to the mismanagement of the Liberal Government. He believed the auxiliary forces to be ready and able to do their duty.

Mr. HUNTER said he belonged to a branch of the service which he believed would be very serviceable. He had been in camp year after year, and had seen the artillery drill with their big guns, and from the practice they made at the targets and dummy soldiers out at sea, he believed it would be a bad job for anybody who came within range of the guns. The officers were becoming more efficient; in fact, the requirements of the Government were that they should reach a certain standard in a certain time. Discipline in camp was very good; taken altogether, the men were good soldiers, and would give a good account of themselves if an enemy entered the country.

Mr. ELPHICK said it gave him great pleasure to respond on behalf of the distinguished branch of Her Majesty's service known in Newcastle as the "Noodles." He had had the honour to belong to that distinguished branch for upwards of twenty-three years, but he was not like his friend, who said he had been defeated. They (the "Noodles") never had been beaten, and he did not think they ever would. A better class of men than the yeomanry it would be impossible to find. They were not only intelligent, but they were men who would go through thick and thin, and if they should receive the call, he did not think there would be many fireside-soldiers amongst them.

The PRESIDENT proposed the "Corporation of Newcastle-upon-Tyne." They were always very glad indeed to have the mayor, sheriff, medical officer, and other councillors present at their meetings. It tended to bring before the notice of the civic authorities of the city that the veterinary-association was, at any rate, a power, and they were anxious that that power should go

forth. They were young as a profession, and they wanted to advertise themselves, so to speak. As regarded the constitution of the present town council, there were many gentlemen present, possibly, in a far better position than he was to speak of the individual characteristics of the members. But, although only a young north countryman, he would say this, that so far as his intercouse had gone with the town council—many of them, he was proud to say, were his personal friends—all he had seen of them had tended to show him that they had a very real and manifest interest in every question that appertained to the welfare of this city. So long as the citizens of Newcastle sent to the council men of the calibre of those it had been his privilege to meet—men who showed that they had not only keen business qualities, but also a keen insight into all the questions affecting the destinies of this great city—it would be well. The presence of the mayor was of special interest, because, as the official head of this city, he was the owner, so to speak, of a very fine stud of horses—a stud that was an ornament to the city, and was one that would compare very favourably with any stud in this country. The stud reflected the greatest credit, not only on those who had the selection of it, but also upon those who had the supervision and control of it. And not a little of that supervision and control would necessarily fall upon the veterinary adviser of the corporation. He had great pleasure in proposing the toast, coupled with the names of the mayor, and sheriff, and Councillor J. A. Baty.

The toast was enthusiastically received.

The MAYOR, in replying, said the Association deserved the support of the chief magistrate and other members of the Corporation. They knew the good work the Association was doing, and with legislation going on, their work was ever increasing. Legislation was inclined in many ways to make their work a more laborious one. They had Acts of Parliament being continually passed for the prevention of cruelty to animals, the killing of diseases, and many other things. He hoped their meetings would continue to prosper. He was pleased to see one or two gentlemen in particular present that night. He could not help referring to his friend, Mr. C. Stephenson—the advice which they got from him as their officer, and also in connection with headquarters, was valuable to the city and to the north of England—no one knew how valuable except those who came in close contact with him. He (the Mayor) was pleased that the President had referred to the horses of the Corporation and also the Tramway Company. Upon Mr. Hunter, who in his dual capacity, had charge of them, they reflected great credit. They had the annual meeting of the Tramway Company the previous day, and he thought Mr. Hunter's bill to the Company amounted to 7¾d. per horse. It was an extraordinary sum for a doctor's bill. ("Far too little.") It showed the healthy condition the horses were in. Sometimes they had little rumours and frights about their horses. They had had one lately, and he must say, to Mr. Hunter's credit, that the result of the inquiry was that the complaints were groundless, and that the horses were well looked after. As regarded the Corporation, he might say that they were anxious to do whatever they possibly could for the city. They had nothing very startling before them excepting the tramways, which would come up at the next meeting. They proposed spending £300,000 on cable-trams, and doing away with horses. Mr. Hunter's occupation would then be gone. People wanted to travel very fast. They were not content with ten minutes' services, but wanted four. That could only be done in a paying way by some such motive power as he had mentioned. The duties of Mayor in this great city were increasing every year. From starting relief funds to entertaining royalty was no easy task. They all brought their anxieties and cares, if they were to be carried out to the credit of the city and the satisfaction of the public.

The SHERIFF, in responding to the toast, said it was the first time he had had the honour of being present. He had enjoyed the meeting very much.

Those who had looked at their city must, he thought, have come to the conclusion that the Corporation in the past had not been inactive. He could say, without fear of contradiction, that they had streets almost unequalled in the kingdom, and that they had parks almost unequalled. The free library would surprise them. They had many other things in the city of which they had a right to be proud. Yet it was sometimes very difficult indeed to come to a right conclusion and give a right vote. But when they joined in a meeting of influential educated gentlemen, like the members of this Association, when they heard the words which they had heard that night, and observed the enthusiastic way in which those words were received, they felt encouraged in their work.

Mr. J. A. BATY also replied, observing that restrictions on the importation of cattle had deprived many of them of a great deal of work. But that was the fault of the people on the other side, who had not kept themselves free from disease. We would only be too glad to have their cattle if they kept them healthy. That they would do so in the future was his sincere hope.

Mr. W. HUNTER proposed "Success to the Royal College of Veterinary Surgeons." The council of the Royal College, he was sure, were a very hard worked body. They attended four quarterly meetings, other special meetings, and the annual meeting, and a number of them had to go great distances, at great cost of time and money, to do so. He thought they must have the welfare of the profession at heart, or they would not do that so willingly. The council was not a monopoly at the present time. Members were admitted as well as Fellows; and he was pleased to say that most of the members came from the northern district. The work they had been doing was to his mind very satisfactory. They had increased the curriculum, and they had made the preliminary examination equal to that of the medical profession; they would now, he thought, be an educated profession. With the work the council had been doing lately perhaps they did not all agree. Admitting young men who were not at their majority, he thought was the thin end of the wedge. Perhaps another man would say "I am only nine months from being 21," and then another might say "I am only twelve months from being 21." He was of opinion that they should be kept to the old rule. It was no great hardship for a young man to be 21 before he got his diploma. Another rule they had altered lately, allowed a man to take his two examinations at one time. He was not sure that that was altogether right. He had great pleasure in proposing the Royal College, coupled with the names of Professor Edgar, Mr. Hunter, and Mr. Elphick. This toast was heartily received.

Professor EDGAR thanked the company very heartily for the kind way in which they had drunk the toast. They were all very much gratified to hear that any work they had accomplished at the council meetings had been acceptably done. There was nothing they welcomed more from the profession —especially when it had its voice concentrated in associations throughout the country—than hearty criticism. It was far better to meet with plain, straightforward criticism, and for them to say whether they liked that which the council did or whether they did not. The council continued to work for the advancement of the profession. They had aimed at making the Royal College of Veterinary Surgeons as the governing body of the veterinary profession, equal to the colleges of the other educated professions of this country. He agreed with the making of the entrance examination far more searching; in that respect the profession had been handicapped in the past. But with the splendid facilities for learning, with the extended curriculum and searching examination, and the determination of the council to uphold the institution, there was no possible reason why the profession should not have a bright prospect before it. Mr. Hunter had criticised the work of the council. He only hoped that this association would make itself felt very definitely. With

regard to the two points mentioned, he said one had only been carried by one vote, and had not yet been confirmed by the special meeting held for the purpose, so that the matter is still before the profession. With reference to permitting students to follow on one class of work while they were still unqualified in the other, he heard at a council meeting a short time ago that it was impossible for a man to do that. There was too much work in Class A. for him to take up Class B. work. The teachers held otherwise, and they must pay due respect to the teachers with all their experience. It was the influence of the teachers on the council which carried it by one vote. The question was still open for discussion. There was the other point about admitting young men to the final examination of the college before they were 21 years old. They must remember it was now a four years' curriculum, and if they put that to two years' pupilship it made six years before a man could become a veterinary surgeon. He would not receive his diploma until he was 21. Supposing the final examination took place in April and that he was 21 before the next examination at Christmas, he would be allowed to come up in April. Otherwise he would hang about and allow his subjects to get somewhat dull, and would not pass so good an examination at the end of that time as he would if permitted to go in for it in April. In other directions he was sure the council would only be too grateful to the profession if they would point out to them anything they did as a body which did not meet with entire approval.

Professor McCALL briefly replied.

Mr. H. HUNTER, in replying, said his views were somewhat opposed to Professor Edgar's as regarded the two points he had touched upon. He had advocated the views of the teachers, because he thought they were just views to take of the matter. He did not think any injustice would be done to anybody by a student going up for his examination a few days, weeks, or months before he was 21 years of age. With reference to the question of allowing the two examinations to be taken together, they all knew that some students were just on the verge of passing the first examination, and it seemed unreasonable to compel him to attend a full session of 30 weeks before he was allowed to go up again for the same examination. They must always understand that they must pass the second examination within the prescribed time. He had voted for the change, and the teachers who ought to be allowed to know something, had voted in the same direction. They had known a student rejected not from any fault of his own, but from some mistake on the part of the examiner not marking his paper in the proper way. The paper was submitted to the Council, and there was no fault found with it. That inflicted a very great hardship upon the youth and upon his parents.

Mr. CLEMENT STEPHENSON submitted the "Sister Profession." He expressed the honour he felt in doing so, and said he was sorry Professor George Murray was not present. He would have liked to congratulate him publicly upon his appointment as the Head Professor of Comparative Pathology in the Durham College. A better man could not have been chosen for the position. Here was a very close affinity between the veterinary profession and the medical profession. He had felt that for many years—since 1852, when he had the privilege of attending the anatomy and physiology classes in the old medical school where Dr. Embleton and Dr. ——— were the professors. He then gained such an amount of professional education, that on going to London he was almost as good when he was a first year student as most of the second year men. Why? Simply because he had got his foundation laid here in their medical school, and that had made him have a very warm heart for the medical profession. They as veterinary surgeons owed an immense debt—a debt which they could not repay—to the medical profession. They had been the leaders in all great movements, and

all the great changes that had taken place in surgery and in medicine; and the veterinary surgeons had followed. But at the same time, although he gave way to no one in honour of that profession, he did think the medical profession owed the veterinary surgeons a certain amount of debt. He believed that in some cases the veterinary surgeons were pioneers to the medical surgeons. But the two professions ought to work hand in hand, and always together. He would go a little further and say that he believed it would be better if certain positions in the world were held by his profession. He believed meat inspection was certainly one of those which the veterinary surgeon was the proper man to undertake. However that might be, in this city he would give the medical officer great credit for he always consulted the veterinary surgeon in all doubtful cases. If that were more often done fewer mistakes would be made. If the veterinary profession had been consulted they would never have had that awful scarlet fever scare. If a practical veterinary surgeon, who knew the habits and peculiarities of the diseases common to cows had been consulted, he believed that huge mistake would never have been made. The veterinary profession in the north of England had immense facilities for education. They had now established here the Heath Professor of Comparative Pathology, who he must say worked very hard to get a laboratory furnished for bacteriology and pathology. In 1888, or even before, he was always pressing his views upon them. Dr. Heath sympathised with him, and was many hours in consultation upon it. The result was that when Dr. Heath was called away he left money to found that chair. The chair had been founded since their last annual meeting, and he was delighted to find that the laboratory was not large enough—they had got such a number of students from all parts of England. Those who were interested in disease must go and see the seeds of it—see them identified, grown and manipulated, just as a seedsman did his wheat, his barley, oats or grass seeds. He was sure that when any of the veterinary profession in the north had a doubtful case, they had only to go to Professor Murray and he would identify it and point out the real nature of it, so that they might treat it properly, and also do the best they could to stamp it out, or prevent it spreading. The largest thing before them now was undoubtedly tuberculosis. He had many conversations with learned men upon tuberculosis and he found that the theory now was that it was an entirely infectious disease—that it was not hereditary. There might be a hereditary tendency, but they must have the bacilli planted in part of the system before they could have the disease. That was very good so far as it went, but personally he knew perfectly well that it was a hereditary disease. What he saw he believed, and he had seen very young calves killed with very marked and well developed tuberculosis in the lungs. Before he sat down he would like to appeal to them on behalf of Mr. Coghill, one of the best men that their profession ever had. He had unfortunately left a wife and family almost unprovided for. Whatever was given would be put to a practical purpose. He coupled with the toast the names of Dr. H. Armstrong, Dr. Clark Newton, and Dr. J. C. Wood.

Dr. ARMSTRONG in replying to the toast said that in proposing the toast, Mr. Stephenson had raised in his mind the thought that he (Mr. Stephenson) must have been a prime mover, from the great number of years he had known him—now nearly thirty—in the very work he had extolled others for doing—that was the formation of the 'close union between this and the medical profession. He (Dr. Armstrong) for his part had always been very anxious indeed to cement the two professions. The remarks made by Mr. Wm. Hunter, in speaking of the council of the college, found an echo in his own breast. Every word Mr. Hunter had said awakened a sympathy in his mind, because their work was exactly the same as the work of the council of the college he himself represented. Now he came to the very practical matters when Mr. Stephenson

had raised with reference to the examination; he had always maintained that the medical officer was the person who ought to say what was proper stuff for food for the people; but in doing so he ought always to be guided, when it was a question of meat, by the opinion of the veterinary surgeon. He was now deriving benefit from Mr. Stephenson's advice in a case he would take to court in a few days. That was his universal custom, and he was glad to say it had not failed yet. He was very glad to find that Mr. Stephenson gave him some credit. Yet he did not budge one jot from his position. It was the business of the medical man to say what was food for human beings, and it was the business of the veterinary to help him to form opinions. With regard to comparative pathology, he did not think Mr. Stephenson had said a word that would not find his warmest approval. They ought to work together. Comparative pathology was a connecting point between them, as what the veterinary profession could do for the animal life they (the medical profession) could do for human life. Observations could be made with animals that could not be made with human beings except in very remote circumstances, when the office the esteemed Sheriff alluded to was performed. Mr. Stephenson had taken a part in the comparative pathology movement alluded to, which was in keeping with every other thing he did. It had given great satisfaction to his own profession, as it had given to the medical. The late Dr. Heath had justified his admiration of Mr. Stephenson by making him one of the trustees under his will for this particular scholarship. Mr. Stephenson had carried it out exceedingly well, and only on the previous night the authorities had taken up the question of enlarging the laboratory for comparative pathology. He believed they would receive a large number of students from the veterinary as well as the medical profession. He was glad to say that, so far at least as his profession was concerned, tuberculin was becoming a thing of the past. He had not heard of it for a long ttme, and he hoped that the veterinary profession had been more fortunate. He wished to say that the Newcastle Corporation was entitled to considerable credit in the matter of tuberculosis. He did not know that any other corporation had compulsory powers for the notification of tuberculosis in animals. Newcastle had it in their Act of 1892.

Dr. NEWTON said, in conjunction with his colleague Dr. Armstrong, he thanked them for the very kind manner in which they had received this toast. When he first knew the Veterinary profession its knowledge of disease and its methods of treatment are different to what existed to-day. Since then the progress of the profession had gone on at leaps and bounds. Many of their leading men were men of culture. He need not go further than refer them to their president. Nobody could doubt that he was a cultured gentleman, and that his knowledge of science compared very favourably with that of the medical men of 20 years ago. He did not specify Mr. Hancock alone; he only spoke of him as a type of the cultured men of the profession. They had heard that afternoon about vivisection. It had hindered the progress of the veterinary and medical professions that opposition to vivisection, and his opinion of the men who had argued against vivisection, was that they were actuated by sophistry or mawkish sentimentality. They were working together for the public good, and they would welcome with the veterinary profession, the enlargement of the latter's powers in that direction, and rejoice with them if the time came when the compulsory notification of tuberculous disease in animals was not only applied to Newcastle, but the whole world. He would be pleased to see the State empowered to inspect all herds of the country, and wherever a tuberculosed animal was found grazing in a herd that animal should be removed. Seeing that animals were a lower organism than ourselves, and that they did not live in such sanitary conditions, was it not possible that these animals had a much larger number of diseases than ever

we had dreamt of? There were many other general subjects the common property of the two professions on which he might have expressed his views had time permitted. He could only say that he had hoped to see more union between the professions in future.

Dr. WOOD thought "brotherhood" would be better than "sisterhood" when applied to the profession. He regretted the absence, through illness, of Mr. Dudgeon, of Sunderland, whom they all regarded with respect. Mr. Dudgeon had been of the greatest help to him in the inspection of meat. He never failed to call Mr. Dudgeon in when he had a case of doubt. He carried out Dr. Armstrong's views in that respect whenever there was any need. Something had been said with reference to the stud of Newcastle, but he would give Mr. Dudgeon credit there again. He was quite prepared to compare the Sunderland stud with that in Newcastle. A better stud was not to be found in the north of England. Newcastle was proud of its psrks, so was Sunderland. They had the notification of infectious diseases from farmers outside the district to the medical officer, though sometimes he had great difficulty to contend with. Having related an instance where he had been the means of stopping a farmer selling milk on account of scarlet fever, he concluded by saying that this was his first visit to a veterinary gathering. He hoped it would not be the last. He sincerely hoped that they would really look upon themselves as brothers, and work in harmony in the future.

Mr. MOORE proposed "Success to the Veterinary Schools." The schools, he said, occupied a very important position indeed, in the productiou of the veterinary surgeon of the future. The Royal College of Veterinary Surgeons determined the examinations, and it was the duty of the schools to educate their students up to, at any rate, the required status of the examination. He was sure that those who had followed the career of the schools, would agree with him in saying that they had done their level best. Certainly the profession had had cause for complaint, that the students had not had opportunities to obtain the practice that was necessary for them to be launched forth as fully qualified veterinary surgeons. He did not say it was the fault of the teachers. The facilities were wanting. No one would gainsay him when he asserted that the teachers of the three schools in Scotland, and the one in London, were actuated by the very best and highest of motives. Their object was to turn out students of the greatest excellence possible. He was of opinion that the London School should commence its session a month earlier, so as to be the same as the Scotch schools. He was delighted to see Professor McCall present. He coupled that gentleman's name with the toast.

Professor MCCALL, in replying to the toast, said it was one he had had to acknowledge many times. He had been a teacher in one of the schools for 36 years, and he had seen a few changes. When he commenced, the Edinburgh Veterinary College curriculum was two sessions, or little over four months. There was little or no education. Yet he could look back with very great pleasure to those days. He believed there was just as able men entered the profession at that time as there were entered the profession now. They were as well acquainted with their work. It was not altogether education. A great deal depended upon the individual himself. There was a wonderful difference between the student of the present day and those of 25 years ago. At that time the profession was in very low water, and, in reality, only two classes of men became members of the profession—men well educated, and who had a wonderful fancy for the profession. Many of the students had served apprenticeships to other professions before they came there. He himself served his time to be a lawyer, and there were several others at that college who had done the same. They had that class of men—men who were educated, and who took the profession out of sheer love of it. They had other men not so well informed, but who were *practically* well informed, many

of them. Nowadays they had a great lot of young men rushing into the profession who had no love or aptitude for it. The consequence was that a great many of them failed. He was not going to say for one moment that the profession should not be educated—educated up to as high a standard as any other. If a medical man required to be an educated man so as to deal with diseases of the human being, how could a man undertake to deal with the diseases of the lower animals if he was less educated? Nay, he would go farther and say that a veterinary required more education—he required more natural tact in tending to the animals than a medical gentleman required in dealing with his fellow-man. No man was unwilling, unless he had some ulterior object, to tell one what was amiss; but there was no such assistance for the veterinary. They ought, therefore, to be educated men who loved the profession. Had he been present at the meeting he would have voted for the change allowing students to take their final examination before they were 21 years of age, even if they were ten months from being the age. Was there any injustice done? The examination was the same as it would have been if they had been 21. They did not receive their diploma until they were of that age. He believed also in a student being permitted to take the two examinations together, if he failed in the first. After a young man had been at college two full sessions he was entitled by law. It was an encouragement for a youna man to go on, and if possible redeem himself. Speaking of tuberculosis, he said he had had considerable practical experience in dealing with animals affected with the disease. He was the first veterinary surgeon who brought it before a court of law. He had experimented with tuberculin, but in his hands he could only say it did not prove a satisfactory agent.

Professor EDGAR proposed "The North of England Veterinary Medical Association." He said it did some people good to come to the north and get a little of the crispness and enthusiasm with which they took everything in hand. The Association should feel proud at having such a gathering as this. He only hoped the Southern Associations would meet together in any way like this. Much had been done by their weekly journal. It had shown what could be done by even a small uninfluential co-operation. He would be glad to see in future the good feeling shown towards the veterinary profession which had been so long shown to the medical by the veterinary. Passing on, he remarked that the subject of vaccine was to be brought before the National Association in London, and he trusted that this Association in the north would help to swell the interest which would be awakened by that gathering. Though the distance was great, he hoped many north country veterinarians would be present, with all their enthusiasm and love for science, to stir them in London up a bit. He had learnt many important things from comparative pathology. It was not alone in zymotic diseases that they could trace comparison. They could do so almost through all disease. He instanced pneumonia, and in conclusion urged the importance of members bringing forward their failures as well as their successes. He coupled the name of Mr. Dudgeon with the toast.

Mr. DUDGEON in replying touched upon the part his father had taken in the resuscitation of the Association io 1878 or '79. Since that time he said it had gone on with unvarying success. It had been the pioneer for almost every reform that had come before the council, as he could safely say that whenever in the future other reforms come before the council they would still be in the forefront.

Mr. MITCHELL proposed "Our Guests" which was heartily responded to. The toast was coupled with the names of Messrs. Curry, Naylor, Roberts and Snaith.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE quarterly meeting of the above Association was held at the Grand Hotel, Manchester, on March 8th. Present:—The President (G. Gartside Mayor, Esq.), Prof. Penberthy, Messrs. W. A. Taylor, A. Lawson, W. Dacre, J. B. Wolstenholme, S. Locke, R. Hughes, A. Munroe, A. H. Darwell, J. H. Carter, E. Faulkner, W. Michaelis, H. Hall, E. S. Gubbins, W. Woods, J. C. L. Jones, W. Ackroyd, F. Shore, E. E. Wood, T. Hopkin, H. Summer, and H. D. Chorlton.

Mr. E. H. Stent, M.R.C.V.S., was elected a member of the Association.

Nominations for Membership.

Messrs. Ernest E. Wood, M.R.C.V.S., Eccles; J. T. Priestner, M.R.C.V.S., Manchester; and F. B. Pearson, M.R.C.V.S., Chesterfield, were nominated or election.

The Treasurer (Mr. WM. WOODS) furnished the Association with the balance sheet for the past year which showed a balance of £72 10s. 2d. to the good. He also pointed out that Mr. Siddall, of Stalybridge, and Mr. Edwards, of Chester, sent in their resignations.

It was proposed by Mr. WM. WOODS, and seconded by Mr. DOWELL, that the Treasurer write to the individuals in arrears drawing their attention to the matter, and pointing out that if the request were ignored their names would be struck off the books of the Association.

Mr. E. FAULKNER proposed, and Mr. CARTER seconded, that the balance sheet be printed and a copy sent to each member of the Association with the next circulars.

The communication from the secretary of the Central Veterinary Society in respect of the Manchester Benevolent and Defence Society was discussed.

Mr. W. A. TAYLOR proposed that the secretary should write to the secretary of the Central Veterinary Society, stating that the Lancashire Veterinary Medical Association, having considered the Central Veterinary Medical Society's letter dated February 5th, 1894, expresses its decision not to take any action in the matter therein referred to. This proposition was seconded by Mr. WM. WOODS and supported by Mr. E. FAULKNER.

Consideration of the Forthcoming Election of Members of Council, R.C.V.S.

A letter was read from the secretary of the Midland Counties Veterinary Medical Association respecting Mr. Trigger's return.

Mr. W. A. TAYLOR proposed that the Association should take no combined action with any other secretary in regard to the election of Council in May next, and suggested that the secretary should write to the Midland Society as follows: "Owing to this Association not running a candidate this year, the members have great pleasure in supporting the candidature of Mr. Trigger."

Mr. HOPKIN suggested appointing a committee.

Mr. WOLSTENHOLME and Mr. FAULKNER agreed with Mr. Hopkin.

Mr. W. A. TAYLOR then withdrew his proposition.

Mr. FAULKNER proposed, and Mr. WOLSTENHOLME seconded, that the question of the election should be left in the hands of the usual committee, to wit the officers of the society, with power to add to their number.

A paper was read by Professor PENBERTHY on

"NEW VIEWS AND OLD PRACTICE."

He said: First, let me thank you for the honour you have done me in asking me to introduce a subject at this meeting, and allow me to say I regard it the more pleasurably in memory of the traditions of this Association, and the fact that I enjoyed the privilege of fellow-studentship with your president. These feelings, I regret to say, have not facilitated the choice of subject. For

one who lays no claim to originality or possession of new information, there must always be some difficulty under this head. The dissemination of professional knowledge by current literature and social intercourse is now so easy and rapid, that under such circumstances I confess to a feeling of laying myself open to the accusation of being presumptuous. I applied to your president for his help out of this difficulty, and he kindly suggested that I should introduce something on the lines of a paper read before the Lincolnshire Veterinary Medical Association last year. It has occurred to me that under the above title I might venture to ask you to stop and think with me for a little while. I have no intention of taking a detailed retrospect of medicine; I have thought it possible that we might spend a short time profitably in inquiring whether in the whirlpool of thoughts suggested by recent discoveries, we recognise the only means towards the accomplishment of all medical study and work. The end I take to be the cure and prevention of disease, to which, as far as we are specially concerned, all should be subservient. A great scientist has told us that "nature does nothing by leaps," and in medicine it is quite possible that a period for reflection and consolidation may be beneficial. Going no further back than a century, what changes do we observe? First, the causes of diseases are intrinsic, arising within the body; then they are extrinsic, coming from without. Then the ascendancy of humoral pathology, now the ascendancy of bacteriology. Then we must treat diseases as an entity, now we must treat the cause as an entity. Then we must be empirical, now we must be scientific. "New brooms sweep clean," and sometimes sweep the gold away with the dust. New knowledge sensationally spread, must naturally shadow, at least for a time, the old, and unfortunately the good with the worthless. It is but the caprice of fashion, and, after all, the survival of the fittest obtains and what is good and true comes up Phœnix-like again. Personally, I hail with delight every scrap of useful discovery in association with medicine, however acquired; but I have a notion that some of the mental energy expended in laboratory experiment and speculation might, with benefit, be directed to clinical observation. No sensible man would be bold enough to suggest that the one can replace the other. My object in making these remarks is not to detract by statement or innuendo from the real importance of any branch of medical science. I would rather take an opportunity of acknowledging the value of, and our great obligation to, the most abstruse methods of scientific investigation now in vogue; but it is clear that medical knowledge can be deemed valuable only as it is rendered available for daily practice. A great teacher said, "the whole need no physician"; and truly our chief function is the cure of disease. There I would pause to ask the question, how far have we advanced in the diagnosis and cure of disease? We are inclined to evade the answer, because the distance is difficult to measure. That the knowledge upon which we base our treatment has increased in a wonderfully rapid manner, and that that advance is likely to be even more rapid, we are bound to allow; but that the determining of disease or its cure has been made proportionately easy or possible, I think may be questioned. If some of us go back to personal experience, and all by aid of literature, we shall find that a century ago our forefathers included in their practice many of the means and methods most highly accredited to-day. The prevailing idea was to expel some inbred disease. Unarmed with physical aids to diagnosis, the practitioner looked to the cause of disease as usually an inbred condition, which he termed a humour, and to the natural emunctories as the passage for them out of the body. When he regarded the condition too critical to act through these, he made an abnormal exit. The same applied if he thought the morbific agent came from without. Prominent symptoms induced by the condition of the so-called humours were combated by the antidotes he had at his disposal.

We may ask ourselves if we have very much improved on his purgatives, diaphoretics, diuretics, blisters, stimulants, or sedatives. Aloes, Epsom salts, antimony, nitrates, calcium, ammonia, alcohol, opium, cantharides, mercury, still rule the roast, and even among advanced scientists blood-letting has its votaries. Theories were vague, and to a great extent untenable, yet the clinical experience of conscientious men, reasoning from results, led to the survival of certain forms of treatment which the revolutions of science have failed to supplant. Up to this date the physical aids to diagnosis were barely thought of, physiology but incipient, literature scant and dear, social intercourse rare; practitioners had to depend on their own resources, with the result that their observing faculties were sharpened. Observation *in situ* at the bedside and in the stable, had led to the establishment of rules, rules of thumb at tortoise pace perhaps, but none the less sure for their slow development. Then is experimental research rendered easier and easier as the microscope progresses to perfection—bacteria are discovered, changes in tissue are more readily studied, and matters not purely clinical have at hare's pace absorbed the thought and excited the imagination of the medico-scientific mind, and to-day we find a great tendency to attribute all diseases to extrinsic causes. I would suggest that the conclusions have been no more correct on account of their rapid growth. Quite recently, however, another change is indicated, and while we should not undervalue or discard any knowledge to be gained from bacteriological research, I am disposed to the view that from the study of causation, arising from within, we are to gain much rational information which will bear evidence of the value of the methods, and support some of the conclusions before inexplicable, of the old practitioners. The discovery of bacteria marked one of the greatest epochs in medicine, and, without doubt, ultimately will bear a rich harvest; but the relegation to them of an exclusive power to cause disease has for a time at least thrown into the shade the study and importance of intrinsic changes of animal bodies, and I fear clinical medicine has lost some of that attention which is essential to its success. I do not suggest this as the fault of the experimentalist. Happily, however, it may be remarked, history repeats herself. At first the specific microbe was allowed to perform the complete *rôle* as the cause of the disease; the anthrax bacillus was said to produce its fatal results by blocking essential capillaries, or robbing the blood of its oxygen. Then we hear of these effects being brought about by a ptomaine, alkaloid, or toxine generated by the micro-organism. After a considerable time came the enquiry as to whether the body of the affected animal took any part in the process, and we hear of the conflict between the organism and the microbe, and the production of globulins, albuminoses, antitoxines, etc. Little by little the body of the host gained ground, and the animal cell is credited with protective power. At last we have demonstrated the important function of the white corpuscle as the defender against invasion, the destroyer of our insidious bacterial enemies, and the scavenger of waste and deleterious products. The chemistry of life broadens our views, and we are now disposed to regard the powers of the animal cell as similar to those of the vegetable cells. The pharmacologist has long shown that aggregations of vegetable cells in the form of plants, possess the power of forming substances, from their chemical character termed alkaloids, as strychnia, morphia, aconitine, atropine, etc., which, after absorption from the stomach or injection into the blood, the physiologist and therapeutist know to be capable of exciting depressing, destructive, and even fatal results. The physical identity of the vegetable and the animal cell, and the uniformity of vital action of living organisms as manifested by the production of identical substances, *prima facie* suggest similar powers for both; and exact biochemical methods, guided by the great minds of such workers as Gautier, Brouardel, Brieger, and others of a rapidly-increasing school, have

demonstrated most remarkable facts, and opened up a field of research which I regard as full of promise, too, for practical medicine. Probably the injunction "man know thyself" has a significance beyond the spiritual sphere for which it was enjoined. The title of the paper from which I am addressing you would embrace matters sufficient to provide for a four years' course of lectures; so that in the short space of the valuable time you kindly afford me, I will only attempt to deal in a cursory and general fashion, always with a view to principles rather than details. While I confess to an intention of trying to emphasize the importance of the consideration of the intrinsic power possessed by animal organisms in inducing disease and preserving the equilibrium called health, and also indicating the benefit which accrued from the attention given to this aspect of medicine by the older practitioners of the art, and the correctness of some of their impressions, I propose to touch on some of the newer views resulting from bacteriological study, as they are applicable to daily practice. It will perhaps be most convenient to arrange my remarks under three heads. Views arising from our knowledge of the action of putrefactive micro-organisms on dead albumen; of pathogenic micro-organisms on living animal tissues and culture media; of the cells of the animal body on the metabolism and disassimilation of food and animal tissues, including a glance at the effect of healthy extracts of healthy animal tissues. First, during the process of putrefaction of vegetable and animal albumen by the action of bacteria there are formed under varying and ill-defined conditions nitrogenous bases (ptomaines), some of which are alkaloid, others not so. Some are exceeding poisonous to animals. The chemical composition of these is well-known, and some have been prepared synthetically. Some are fluid and volatile, having peculiar characteristic odours, contain no oxygen C H N; others solid not volatile contain oxygen C H N O. The process of putrefactive decomposition is so general, that we must regard the knowledge gained on this point as extremely important to us. Yearly, the number of these cadaveric substances is being added to, and their action on animals studied. The following will serve to indicate many possibilities; at any rate they are worthy of our cognisance. From putrefying yeast a body named sepsin has been separated, and this is probably found very generally in nature; its action is almost identical with that of atropine. Cadaverine, extracted from putrid flesh, has a caustic action on tissues, inducing death of the parts to which it is applied, and when absorbed gives rise to the symptoms of Asiatic cholera. Neurine, derived from the same source, has an action similar to that of curare. From putrefying maize two substances are obtained, one of which has an excitant effect comparable to that of strychnine, inducing tetanic symptoms, and another having a narcotic effect, producing dilation of the pupil, paralysis of the cardiac vagus and intestinal muscle. The albumen of flesh, fish, fowl, or vegetable undergoing putrefactive decomposition, according to the stage of decay yields substances as marked in their physiological and toxic action as any of the recognised vegetable alkaloids. To this we have already a long list which is still being added to. From personal experience and inquiry from analysts, I am inclined to believe that 80 per cent. of the cases sent for analysis fail to yield any evidence of the presence of recognised poisons, and conclude that of this 80 per cent. it is fair to assume that a certain proportion of the deaths is due to ptomaines, etc., not yet looked for. By a strange coincidence, while I am writing this my eyes fall on the words of one of my colleagues, whose experience as a veterinary surgeons' analyst entitles his opinion to the greatest respect; I refer to the laboratory notes of Professor Bayne in the March number of *The Veterinarian*, stating that many deaths attributed to strychnine he is convinced are not due to this or any other poison intentionally administered, but to poisoning by ptomaines. Having the same practical bearing are the products

of various fungi which flourish on vegetable matters under suitable conditions. Under this heading it is essential to remember that the effects of these ptomaines depend distinctly on the dose taken, so that not only death, but symptoms of a widely-varying range may be attributed to them. If we carry these thoughts into our daily practice, we may find a solution of the origin of many symptoms and phases inexplicable on other grounds. Even at the present moment our knowledge of this subject is incomplete, and to a certain extent indefinite. But in the actual treatment of morbid condition produced by the matters referred to, have the dictates of recently-gained scientific knowledge made much advance on the dictates of common sense and observation, which led the old practitioner to inquire what an animal was eating or drinking; to give his injunctions to change the food or water or both; to use the means at his disposal to expel the imaginary theoretic factor which induced the symptoms, and to combat or antagonise these as they occur? Because we cannot demonstrate the cause, we may not conclude that we may not be able to effect good. The second aspect of my paper—the effect of the action of pathogenic organisms on animal tissues—has now assumed such enormous proportions that we cannot take but a most cursory glance at it. Long after the discovery of pathogenic microbes and their recognition as the cause of specific disease, their mode of action remained unknown. Now it is proved that their activities in the animal body result in the formation of injurious matters—toxines, alkaloids, albuminoses, globulins, &c., and that the symptoms are due to the separate or combined action of all or some of them, and death to their action in the organs essential to life. What share the animal body has in the production of these time will not permit us to consider, but from sterilised cultivations in media outside the body, toxines have been extracted which produce a poisonous effect similar, in fact at least, to that following entrance of the microbes themselves. Thus the product of a pure culture of the diphtheria bacillus injected, induces the characteristic local changes. From cultivations of the tetanus bacillus there have been separated different bodies, one of which named tetanine, on being injected, produces tetanus. History and experience suggest another side to this subject; while one effect of the entry of the specific organism is pathogenic and undesirable, another is protective and favourable. Common observation has long told us that one attack of specific disease usually brings about a change whose nature I will not now presume to indicate, further than that it affords protection for varying periods from fresh attacks of the microbe. The announcement of Koch's supposed cure for tuberculosis opened up another field of thought. Clinical observation of patients subjected to its effect with a view of cure revealed the fact that injection of tuberculin was followed in the tuberculous tissues and system generally, by a remarkable reaction, unfortunately far short of the hopes held out as to its curative powers. It failed in its original object, but the utilitarian mind of the physician saw the opportunity, and indicated a possible power as an aid to the diagnosis of an occult and difficult disease of the lower animals. Its use has been adopted, I regret to say, not with unqualified success, but I think that we already know of it from this point of view warrants our taking every opportunity for extending our experience with it. Without the aid of some such agent, I fear any attempt at eradication must prove a failure. The introduction of mallein, the perfectly sterile product of the glanders bacillus, and its application to diagnosis soon followed. Of the assistance rendered to me in the detection of glanders I can say I know of no other aid or collection of aids to diagnosis which have yielded so certainly evidence of the existence of glanders; it is still left for us to learn whether mallein has curative or protective properties.

The third division of my subject comprises a brief glance at the effect of the cells of the body in the disassimilation or metabolism of tissues, and of

animal extracts in health and disease. The system of regarding the body itself as the generator of diseased conditions, almost monopolised the medical mind till within the last twenty or thirty years. When bacteria began to claim attention, the marvellous discoveries in this latter direction had the effect of a revolution, and thought was diverted at a tangent. Under the former, attention was directed to expelling the casual factor and its products; under the latter, to the prevention of entry from without. My object to-day is not to detract from the incalculable value to be derived from application of the knowledge gained from a study of bacteriology, but to endeavour, in however feeble a manner, to express and support the view that benefit may be also derived from attention to changes in the body apparently independent of bacteria, the power of self-contamination or auto-intoxication. I wish to support the claims of the animal cell to those of the vegetable. The constant change essential to the vitality of protoplasm, comprises disassimilation of the old and assimilation of the new. During such processes, materials are formed, some of which are beneficial, others which are injurious. Biochemistry goes to show that the whole cell-change takes place in the presence of oxygen, and a part in its absence.

Thus, we have a series of ærobic and anærobic action in a metabolism of animal cells, precisely the same as determine the effects of bacteria. For a long time the conversion of the albumen of the body, and probably of the food, into harmful combinations of C H N and C H N O, has been recognised; we need only name Kreatin, Kreatinine, Tyrosin, Urea, etc. It has also been long known that protoplasm has the power of forming organised ferments-enzmes, which further split up carbon compounds, and lead to the formation of other C. compounds, usually of a simpler constitution—ptyalin, diastase, pepsin, etc. The ferment is present in unicellular animals, amœba, and the mammalian leucocytes, as really as in the peptic glands, and has a function of splitting up equally important to the individual. In health as well as in disease, the animal body must be regarded as a laboratory largely under automatic action, where the relation of cause to effect is as real as in the chemist's or bacteriologist's laboratory. Though in a vague manner, the older practitioners, free from the consideration of chemical, bacteriological, and microscopic investigation, attributed to the body itself high powers, both as to giving rise to disease and to its cure, the *vis medicatrix naturæ*. Let us, for a moment, look and see how far recent research justifies these views, and consider what they suggest for future action.

By virtue of some vital power not comprehended, but included under the term cellular processes, there are formed alkaloids and other substances essential to the healthy performance of function, and which also originate morbid conditions, to which are attributable symptoms and fatal consequences. The alkaloids resulting from the normal cellular activities in animals are termed "leucomaines," to distinguish them from those resulting from putrefaction—"ptomaines." The origin of both appears to be in the albumen molecule. Though this side of organic chemistry may be said to be little other than inceptive, it has shown enough to lead us to believe that the importance of the formation of leucomaines by the normal cells of the body is not inferior, from our point of view, to that of vegetable cells, in shape of bacteria, or aggregated to form the more highly organised plants. How much the formation of leucomaines may be affected by bacterial action is not known. Though much has been ascertained as to the chemical, physiological, pathological, and therapeutic action of many of these products, our knowledge is not sufficiently definite to allow of a well-formed classification. In all nitrogen seems a prominent feature, combined as C H N or C H N O. Without any attempt to approach exactness or exhaust the subject, I will venture to draw your attention to a few of these bodies which have been

obtained by experiment, in the hope that it may not prove uninteresting nor without value. The contents of these intestines are not so easily analysed, but products similar to those found in urine have been recognised therein. Analysis of the urine, however, has revealed to us more in this direction than any other means. Urea, uric acid, hippuric acid, and caluric acid, kreatin, xanthin, allantoin, indican, phenol, salts toxic and non-toxic, are well-known. The origin of some of these has been traced to the transformation of the tissues; their amounts are varied according to circumstances; they are normal constituents of the body; and their presence in the urine indicates the injurious effect which would follow their non-elimination. Happily, it is arranged that urea is a diuretic; it excites the activity of the kidney, passes out, and carries toxic matters with it. Arrest the discharge, and what we term uræmic poisoning is the result. Connected with this is the separation, in 1888, by Bouchard, of two bodies, one from the urine of the sleeping hours, one in the urine of the waking hours; that of the sleeping hours being convulsivant and excitant, that of the waking hours narcotic. It is inferred from this that materials formed in the body, the result of exhaustion of all kinds, especially muscular, "ponogones," are produced during the day, accumulate and induce their sedative effects on the brain cells, heart, etc., and that cerebral anæmia is a result and arrested oxidation a consequence. There is thus much less oxidation by night than by day, and the products of the tissues, anærobically, is convulsivant; so that waking occurs when a sufficient dose is formed; this is by far the best explanation of exhaustive sleep yet offered. I notice an article bearing on this in the VETERINARY JOURNAL for March. From normal fresh spleen Morrelli has extracted an alkaloid extremely toxic on injection, producing stupor, paralysis of reflexes, convulsions, etc. Bile salts destroy muscle cells and blood cells, setting free their constituents, some of which are known to be poisonous; fresh beef tea, even when robbed of its albumen, is stimulant; an injection of extract of testicle is said to rejuvenate the sexual desire and generative functions. The adoption of these animal extracts has especially been on the clinical side. Within the last decade it was found that dogs from which the thyroid bodies were removed, or whose essential structure had wasted, became the subjects of a mucoid change of their connective tissue, myxœdema. To patients so affected small quantities of thyroid extract are administered with marvellous result. In last month's *Lancet*, the President of the Manchester Medical Society states that he has used bone marrow in the cure of anæmia. Defensive proteids have also been isolated; thus Hankin separated from the lymphatic glands, a globulin which has the power of killing anthrax bacilli; white corpuscles attack and digest bacteria. Time only prevents us from carrying this further.

Fermenting organisms, as the yeast plant, produce alcohol, but if in the vat the percentage of alcohol reaches above a certain point the plant dies. Fortunately so much may be said for the pathogenic bacteria; pepsin acts only on a certain proportion of peptones. If the excess of the product is removed and fresh material supplied, the torula bacteria and the pepsin manifest their activities; so it is with the animal.

It is stated by Gautier and others, that the blood normally contains poisons formed by the cells of the body, etc., and that if these were in ten times the amount the animal would be fatally intoxicated. It is also believed that certain accumulations may be local, *e.g.*, that lactic acid produced in the body, may accumulate in certain muscles and be the cause of muscular rheumatism (if injected, lactric acid produces a similar effect); the effect of these materials depends to a great extent on the dose, and the rate of their production may be influenced in many ways we cannot touch on here. Probably in small doses they are favourable to health, but if the rate of discharge is not properly related to the production, the accumulation is followed by changes denoted by

what we call symptoms. Experiment has proved that, in health, substances of varying action are formed in the body, which include according to dose, or rate of excretion, in their category of physiological and pathological action :—depression of temperature, elevation of temperature, slowing or rushing of the pulse or respiration, darkening of the blood, breaking down muscle and blood cells, spasm and paralysis, narcosis and excitability. Probably the equilibrium called health is maintained by free oxidation of leucomaines, by action of the emunctions of the kidneys, skin, liver, intestines, etc. Imperfect oxidation or excretion may cause an accumulation. The whole subject is to me very fascinating, but we must learn it, bearing in mind that the value of such knowledge must absolutely depend on its application to practical medicine and hygiene. Do we not find that conclusions less definite, less exact have resulted from simple clinical observation, and that to the impressions produced in the minds of practitioners is due the immediate progressive and cumulative effect in practical application? Retrospective study shows me very much to admire in the older practice. I have found old veterinary surgeon's case books, which indicate a capacity for attention to details equal to that of the laboratory experimenters; this, I believe, accounts for much of the success of their practice, and the selection and retention of remedies and methods which so-called scientific discovery has failed to replace.

Prior to the introduction of mechanical aids to diagnosis (we must be grateful for each in its place)—the thermometer, microscope, sphygmograph, micro-photography, electric light, etc.—it was all essential to success to educate, from a clinical point of view, the rare faculty, "observation," and the quality of self-dependence.

The human mind, like the human body, develops and acquires strength, more from use than help. I confess to a perhaps unwarrantable feeling that the tendency of recent years has been to direct attention from this aspect of medicine, and that as a consequence it may possibly have been justly remarked that the advance of therapeutics and curative treatment has not been coincident with the advance of pathology. I do not undervalue the progress of pathological, bacteriological or microscopical science. Research has added much that is new and applicable to practical medicine, and opened up a wonderful field of promise. It has done much to establish the value of clinical study, and to share in correcting its errors and abuses; it has certainly afforded us grounds for explaining the *modus operandi* of means and methods whose selection and retention accrued solely from observed results, though theories with which these were associated are shaky or utterly untenable. Let us exemplify this by reference to some old practices; thus, centuries before the real function of the leucocytes as defenders and scavengers of the body, their increase during inflammation, or bacteria were dreamt of, thick creamy pus was called laudable, and thin regarded as the converse; consequently, it was deemed a desideratum to make it laudable long before their destructive power on bacteria was hinted at. Tar, aromatics, Friar's balsam, were observed to have a favourable effect. Blisters were applied successfully long before the recognition of their power to increase the white corpuscles, and probably the cell globulin now regarded as fatal to micro-organisms, common and specific, or their real effect on the cardiac and vaso-motor centres. Blood-letting was in vogue before it was established by chemistry that in diseases of many kinds the blood may become fatally toxic, even from the accumulation of physiological or bacterial products.

The dose of physic, the diuretic, the diaphoretic, had obtained a firm hold on the medical mind long previous to the reliable analysis of the fæces, urine, or skin eliminations; and fresh air before the oxidation of tissues and effete matters, or ærobic and anærobic actions of cells was thought of. We read, too, of consumption being contagious, and treated as such, a century before

the discovery of Koch's bacillus. Practical experience made it plain that nitrogenous diet and imperfect action of the emunctories were followed by disease, ages before anything like a correct view of cellular processes was foreshadowed. Then to turn to the medicinal agents in use in olden times; has direct experimental investigation replaced them? Is opium deemed less serviceable now, because it is found to contain morphia and other alkaloids? Cinchona, because quinine has been separated from it; calomel, because it is now said to act directly on the intestinal glands, rather than directly on the liver; turpentine, because it is now proved to arrest fermentation and possess antiseptic qualities; ammonia, because it is now obtained from other sources than camel's dung, or that it affects the cardiac more than the cerebral ganglia? McBride, writing in 1775, says a hydrogogue draws off the waters and poisonous matters from the blood. In 1885 another authority says if into a loop of intestine a purgative is injected with a fine syringe, it will be found that the loop of intestine will become filled with watery materials from the blood vessels, the result of the action of the dung.

There will be found very little difference in the practical value of the statements, simply different ways of expressing the same great truth. I need not say that the burden of my words is a plea for clinical observation. I have tried it in a very general way, to show that to it we owe much that is good and reliable. I hope I may to some extent have succeeded in supporting its claims. I do not wish, however, to imply that old views are better than new; old medicine was pregnant with errors, and we are grateful for what scientific discovery has done to correct them. Experimental research has not been without its fallacies, possibly magnified by the medical and lay press and sensationalism of the present day. Certainly let us be anxious to annex and appropriate in practice everything that is valuable in scientific discovery, while we are careful that it does not obscure the importance of the older methods we have found fraught with so much good.

The clinician, the actual practiser of the healing art, should occupy a position not second to any. In order to fill this position it is essential that he should keep himself abreast of the advance of useful knowledge from every source; of necessity our forefathers learned all from unaided clinical observation, and what held good a hundred years ago holds good still. The physician is made at the bedside, the veterinary surgeon in the sick stable or in the face of actual cases; the foundation for this must be laid at College, but at College with practice always in view. I would ask the question, do we not ask too much of the newly-initiated member of our profession? We want practical men; it is not often that we get old men's heads on young men's shoulders; what monetary value do we set on the services of an average qualified assistant fresh from College, even if he has had a pupilage of two or three years? The knowledge which will render him valuable is that to be gained from his own observation.

One other point I should like to make, and that is in reference to the education of the veterinary student. Philosophers of all ages, in all languages, have given expression to the sentiment conveyed in the words, "It is not the will of the gods that one man should know all things at all times." The human mind is finite and life is limited to a short span; may we stop and inquire whether we are not attempting the impossible? Can veterinary surgeons who gain a desirable livelihood as such be practical chemists, practical bacteriologists, micro-anatomists, expert botanists at one and the same time. Will their opinion on each of the capacities be deemed valuable? Is there no process of filtration to which the details may be subjected that the essence may be available? This I deem the special duty of teachers.

Knowledge of special and collateral subjects has now become so extensive, and to a certain extent unstable, that it is impossible for the student to go

satisfactorily through much of the details; further, it is undesirable. We have made a great advance in our demand for a higher general education; students will, I hope, be better prepared to see the force of natural laws and scientific principles; but unless all teaching and examining be carried out with the main object in view, the application of knowledge to the practice of the veterinary surgeon, our efforts will end in failure. In our profession there may be room for a few specialists in laboratory research—there cannot be many. Sick animals are our subjects, and as a man is enthusiastic in regarding their habits in the application of his treatment and its results, so will he be useful and happy Until we learn to regard anything of importance, we fail to excite enthusiasm in practising it. The result of clinical observation by its contributions to the science of medicine has been of prime importance in the dark empirical ages. Every ray of light emanating from experimental research must be focussed here; a means to an end we dare not despise, and in my humble opinion everything in our education which draws us away from the practical aspect of our work is detrimental to us. I look to our veterinary medical associations, through their meetings and printed reports, as one of the most important means of centreing and disseminating the work of clinical experience, and of utilising sound new views and perpetuating good old practice.

Mr. WOLSTENHOLME thanked the essayist for the valuable paper he had read, and hoped that further discussion might be possible after the paper had been printed, and members had had an opportunity of mentally digesting it. He went on to say "in venturing to make a few remarks on the impressions I have received on listening to the paper, one point struck me as being somewhat anomalous—that is to say, the professor graphically pointed out some of the revelations which chemistry has made as to the production of disease; how the microscope has revolutionised the methods of study and changed and enlarged our knowledge of pathology; how new aids to diagnosis are to be found in the use of substances like 'mallein' and 'tuberculin'; and yet the professor further remarks that the same drugs were used to-day as fifty years ago; and by inference it seemed to me to indicate that the same methods of treatment or use of those drugs was in vogue to-day as in those remoter ones. I quite admit that many of the drugs now used are the same, but are they used in the same manner? In many instances I think not; our fathers certainly used a bullet with the old Brown Bess, we to-day have a bullet for the magazine rifle, but the weapon and the projectile are altered: opium is a sheet anchor in medicine, but we also use its alkaloids with a subcutaneous syringe. Then, again, whilst aloes has still the same therapeutic action, some have ceased to use it in many cases where it was formerly all important. The setoning and blistering which was practised in the treatment of pleuritis and pneumonia, is a thing of the past; and many other instances may be quoted in which the methods of using the drugs is changed. It has been by the blending of the teaching of science and experience; but to-day we can point to a lower percentage of deaths in many diseases, and to the almost disappearance of some. Without doubt, Prof. Penberthy says, clinical study must form a large part of the training of a surgeon, human or veterinary; and especially so is this the case with the latter, for he has few of those aids to diagnosis which the patient of the human surgeon can supply. With respect to auto-infection as distinct from microbic infection, possibly our essayist may explain a little further to us, for I find it somewhat difficult to completely accept. We have so much to learn, and possibly to unlearn, of the *rôle* played by micro-organisms in the production of disease; certain it is that they gain access to our bodies by every inspiration, with every act of swallowing, whilst in some animals they play an important part in the digestion of food, *vide* their action in the rumen of those animals possessed of this organ. As to the question, can it be expected that veterinary surgeons can be at the same time expert

bacteriologists and chemists? Certainly not, nor can the surgeon or general practitioner; but it is at least necessary that both be so trained that they shall understand the various processes, and be able to intelligently weigh for themselves the evidence which experts may bring before them. In conclusion, I would express the pleasure and fund for profitable thought which I have derived from listening to the paper, and again tender my thanks to Professor Penberthy."

Mr. HOPKIN in thanking the Professor for his excellent paper asked whether the Professor thought that in the treatment of tetanus it would be possible to supply the veterinary surgeon with the matter necessary to inoculate.

Mr. DACRE thanked the Professor for his instructive paper.

Mr. LAWSON in thanking the Professor for his paper, said he would like to digest it before saying anything upon it.

Mr. WOLSTENHOLME proposed that the discussion on Professor Penberthy's paper be adjourned until our next meeting. This was seconded by Mr. Lawson.

GLASGOW VETERINARY COLLEGE.

THE work of the session at this institution terminated on May 17th, and on the 18th and 19th the Oral Examinations of the Royal College of Veterinary Surgeons were couducted within the museum of the College. The Board of Examiners included Dr. George Fleming, LL.D., C.B., &c., London; Mr. J. Roalfe Cox, F.R.C.V.S., London; Mr. Duguid, F.R.C.V.S., London; Mr. J. Freeman, F.R.C.V.S., London; Professor Hamilton, M.D., Aberdeen; Professor M'Kendrick, LL.D., Glasgow; Veterinary-Colonel W. B. Walters, F.R.C.V.S., London; T. H. Simcocks, F.R.C.V.S., Drogheda; Finlay Dun, F.R.C.V.S., Edinburgh; H. Olver, F.R.C.V.S., Tamworth; W. Woods, Junr., F.R.C.V.S., Wigan; James Clark, F.R.C.V.S., Coupar Angus; Dr. Sims Woodhead, London; J. Malcolm, F.R.C.V.S., Birmingham; Veterinary-Captain T. Smith, F.R.C.V.S., Aldershot; Professor F. R. Green, M.A., B.Sc., London; W. A. Taylor, F.R.C.V.S., Manchester; Dr. W. F. Peacock, F.R.C.V.S., London; H. Somerville, B.Sc., London; J. B. Wolstenholme, F.R.C.V.S., Manchester; and R. Rutherford, F.R.C.V.S., Edinburgh. There were also present as *ex-officio* members Principal M'Call, F.R.C.V.S.; Professors W. Limont, M.A., M.B.; Thos. King; J. McI. M'Call, M.B.C.U., M.R.C.V.S.; C. M. Aikman, M A., B.Sc., &c.; James Murphy and A. Trotter, M.R.C.V.S.; and W. L. Johnson, Secretary.

The following gentlemen passed the first, or oral part of the final examination:—Messrs. J. E. Pottie, Paisley, Renfrewshire; J. M. Mark, Newry, Co. Down; A. C. Howatt, Pollokshaws, Renfrewshire; R. Margrave, Swansea, Glamorganshire; J. Hill, Glasgow; A. Crabb, Glasgow; M. White, Glasgow; T. C. Ferguson, Glenluce, Wigtonshire; J. Kyle, Port Glenone, Co. Antrim; and H. J. Maxfield, Congleton, Cheshire.

The following students passed the "B" or second professional examination, viz.:—R. Armstrong, Belfast; R. H. Ruthertord, Warwick; Jas. Dick, Port Glenone, Co. Antrim; John M'Neil, Greenock, Renfrewshire (great credit); Robert Mitter, Strathaven, Lanarkshire; William Cockburn, Dreghorn, Ayrshire; James Rankin, Hamilton, Lanarkshire; M. E. White, Glasgow (great credit): W. Roy, Glasgow (great credit); James Stirling, Kippen, Stirlingshire; James Eadie, Pollokshields, Renfrewshire; G. Mayall, Moseley, Lancashire; James Laird, Coatbridge, Lanarkshire; and David M'Geoch, Paisley, Renfrewshire.

The following students passed the "A" or first professional examination, viz.:—J. Smyth, Ballynahinch, Co. Down; J. Marshall, Torrance, Stirlingshire;

D. R. M'Call, Baillieston, Lanarkshire; E. P. Jenkins, Swansea, Glamorganshire; D. Jack, Helensburgh, Dumbartonshire; D. Walker, Rothesay, Buteshire; J. F. M'Eachran, Campbeltown, Argyleshire; R. H. Johnston, Forkhill, Co. Armagh; J. Donaldson, Largs, Ayrshire; R. Anderson, Glasgow; W. A. Kilpatrick, Belfast; T. Rennie, Ayr (great credit); W. Crawford, Beith, Ayrshire; J. Smith, Kilbirnie, Ayrshire; and J. Crawford, Beith, Ayrshire.

Medals granted by the Highland and Agricultural Society of Scotland, the late Professor Allen Thomson, of London, and Principal M'Call, and Certificates of Merit awarded in the different branches of study, as follows, viz.:—

Medicine and Surgery (Horse).—Written Examination: Silver Medal, H. I. Maxfield. First Class Certificate, Matthew White, J. Gorman and A. Hart. Second Class Certificates: T. C. Ferguson, P. Stewart, and Wm. M. Murray.

Medicine and Surgery (Cattle).—Written Examination: Silver Medal, Matthew White. First Class Certificates, H. J. Maxfield, A. Hart, and J. Gorman. Second Class Certificates, Wm. M. Murray, J. Wilson, and John Hill.

Materia Medica.—Written Examination: Silver Medal, T. C. Ferguson. First Class Certificate, D. Brown. Second Class Certificates, H. J. Maxfield and John Hill.

Pathology.—Silver Medal, M. White. First Class Certificates, H. J. Maxfield, T. C. Ferguson and D. Brown. Second Class Certificates, J. M. Wilson, Alex. Crabb and R. Margrave.

Senior Anatomy.—Silver Medal, J. M'Neil. First Class Certificate, J. Stirling. Second Class Certificate, R. Miller, J. Rankin and W. Roy.

Physiology.—Silver Medal, J. M'Neil. First Class Certificate, R. Miller and J. Rankin. Second Class Certificates, J. Stirling, R. K. Rutherford, J. Eadie and R. Armstrong.

Best Professional Examination in Anatomy.—Gold Medal given by the late Prof. Allen Thomson, Wm. Roy.

Junior Anatomy.—Silver Medal, D. Walker. First Class Certificates, J. Marshall, R. Anderson and J. R. M'Call. Second Class Certificates, R. Peddie, T. Rennie, J. Smith and R. H. Johnston.

Chemistry.—Silver Medal, J. Marshall. First Class Certificates, T. Rennie, J. R. M'Call, R. Porteous and J. F. M'Eachran. Second Class Certificates, W. Crawford, D. Walker, J. Donaldson and J. Smith.

Botany.—Silver Medal, J. Marshall. First Class Certificates, T. Rennie, D. Walker and J. M'Eachran. Second Class Certificates, D. Jack, R. Anderson and J. Donaldson.

Zoology.—Silver Medal, J. R. M'Call. First Class Certificates, J. M'Eachran, J. Marshall, and D. Walker. Second Class Certificates, J. Smith, W. Kilpatrick and R. G. Anderson.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

At the Monthly Council held on May 2nd, Sir John Thorold presented the following report from Professor Brown:—

Pleuro-pneumonia.—Another outbreak of this disease was discovered a few days ago on a farm at Minster, near Margate, in Kent. There seems little doubt that this outbreak is connected with those of last autumn in Middlesex—some cows purchased in the Metropolitan Cattle Market last August from a dealer on whose premises in Middlesex pleuro-pneumonia was reported in September. Arrangements are being made for the slaughter of all the cattle which have been exposed to the risk of infection.

Swine Fever.—According to the returns published in the *London Gazette*, this disease continues quite as prevalent as ever. During the four weeks

ended April 21st, there 689 pigs died of swine fever, 5,463 were slaughtered as diseased or as having been exposed to the risk of infection, and 96 were slaughtered as suspected, but found free from the disease on *post-mortem* examination.

Anthrax.—There seems to have been a slight decrease in the number of outbreaks in the four weeks ended April 21st as compared with the preceding four weeks. There have been 36 outbreaks and 90 animals attacked, as compared with 57 outbreaks and 99 animals attacked.

Glanders.—During the four weeks above referred to there have been 78 outbreaks of this disease in Great Britain, and 115 horses attacked.

Rabies.—There have been 14 cases of this disease in four weeks; they occurred in the counties of Lancaster, Surrey, York (W. R.), Ayr, and Lanark.

Investigations.—Since the last meeting of the Committee investigations have been made for members of the Society regarding the following diseases :—

1. Parasitic pneumonia in sheep (caused by the *S. rufiscens*).
2. Pyæmia (blood-poisoning) in calves.
3. Abortion in cows (four outbreaks).

Tuberculin has been supplied for use in one herd, and anthrax vaccine has been issued for the inoculation of 55 cattle and six horses.

At the college, experiments have been made to test the protective effect of Pasteurian vaccination against anthrax in cattle, horses, and sheep. In reference to protective inoculation for anthrax, it is necessary to inform owners of stock that, according to the published statistics for several years, the losses from inoculation do not usually much exceed 1 per cent. In some cases, however, the losses amount to five or even ten per cent.

The correspondence which had passed between the Secretary and the Board of Agriculture on the subject of the restrictions at present existing on the movement of swine from infected areas under the Swine Fever Orders Nos. 5,156 and 5,159, as affecting the entry of pigs at the Cambridge Meeting, had been laid upon the table, together with the Secretary's circular letter of April 18th on the same subject. Having regard to the fact stated in Professor Brown's report that swine fever continues as prevalent as ever, and considering the very serious inconvenience which would result if a case of the disease should occur in the showyard and necessitate the slaughter and burial of all the pigs sent for exhibition, the Committee recommended that no entries of pigs should be accepted for the Cambridge Meeting. Letters had been read from the Highland and Agricultural Society of Scotland, requesting the co-operation of the Royal Agricultural Society in organising a deputation from the leading agricultural societies to the Presidents of the Board of Agriculture and the Board of Trade, asking that fresh legislation may be immediately undertaken by the Government for repressing fraudulent practices in the sale of foreign meat as British meat. The Committee recommended that a reply be sent to the Highland Society to the effect that, whilst the Council fully realise the great importance of the subject, it would in their opinion be better, before taking action in the direction suggested, to await the introduction of the bill dealing with cases of fraudulent misrepresentation in regard to the sale of meat which the President of the Board of Agriculture had stated was now under consideraton, and which he hoped to submit to Parliament at an early date. About 17,000 copies had been printed and circulated of the leaflet on Abortion in cattle, as drawn up by the Special Committee, and amended by the Council at their last meeting. The Special Committee on Abortion had held its third meeting on April 30th, when evidence had been taken from four further witnesses. Letters had been received from Mr. Lewis P. Rees and Mr. Charles Morgan, accepting the post of Provincial Veterinary Surgeon for

the counties of Brecon and Carmarthen respectively, upon the terms laid down by the Council.

Sir JOHN THOROLD said that as the question of swine fever and the exclusion of pigs from the Cambridge showyard had had important developments since the last Council Meeting, he desired to explain the reasons of the recommendation made by the Veterinary Committee that no entries of pigs should be accepted for Cambridge. The Council would have observed, from the correspondence between the Secretary of the Society and the Board of Agriculture, which had been circulated and published, that, in the view of the Board, it was necessary to maintain the existing restrictions as to the movements of pigs now in the counties scheduled as "Swine Fever Infected Areas." That being so, the Society would have been precluded in any case from accepting any entries from the scheduled counties; and, in view of the extent to which swine fever was still prevailing, the Veterinary Committee had been compelled to consider whether any exhibition of pigs at all in the Cambridge showyard should be permitted. Having carefully considered the whole circumstances, the Veterinary Committee were unanimous in their opinion that it would be best to decline all entries of pigs. There was, of course, the consideration that the entries of pigs would be very partial, some counties not being able to exhibit, and others being free from the disease. It was a matter of common knowledge that many people were taking measures to send their pigs out of infected districts into non-infected districts for the purpose of sending them to the show, and the consequences of an outbreak in the showyard would be very serious. Under these circumstances, the Council would probably be of opinion that it would be very much better, both in the interests of the Society and in the interests of owners of stock, that they should decline to accept any entries of pigs at Cambridge. He begged, therefore, formally to move—

"That, having regard to the fact stated in Professor Brown's report to the Veterinary Committee that swine fever continues as prevalent as ever, and looking to the very serious inconvenience which would result if a case of the disease should occur in the showyard, and necessitate the slaughter and burial of all the pigs sent for exhibition, no entries of pigs be accepted for the Cambridge Meeting."

After remarks from other speakers, Professor BROWN said that, though he was not prepared to say that there was more of the disease in the country than there was three months ago, new centres, entirely unsuspected, and in different parts of the country, which had been previously considered perfectly free, had been discovered within the last few months. One risk to which the Society would be exposed was this. A number of pigs were being moved from infected areas into healthy ones, and the number of healthy districts was daily decreasing. If an inspector discovered an outbreak in any part of the country, and found that any pigs belonging to the owner had been sent to the show, he would be bound to follow them, and at least to kill the pigs in that sty and bury them on the spot.

The motion was carried.

Notes and News.

BOVINE TUBERCULOSIS IN THE GRAND DUCHY OF BADEN.—During the second quarter of 1893, tuberculosis was reported to have been discovered in 654 cattle slaughtered, or 1·75 per cent., these animals having been killed in abattoirs under the inspection of the sanitary police service.

STRAY DOGS IN LONDON.—According to statistics compiled in New Scotland Yard, it appears the police captured 2,161 stray dogs in April in the streets of the metropolis, 1,846 of which were afterwards conveyed to the

Dogs' Home at Battersea. During the above period 148 persons, including one constable, were bitten in the streets, and the police killed 12 dogs, one of which was found to be suffering from rabies.

DESTROYING THE GERM OF TUBERCULOSIS.—Experiments made by Dr. J. Forster at Amsterdam to determine the temperature necessary to kill the tuberculosis bacillus when it is present in milk, show that it is not necessary to boil milk to kill this germ. It can be destroyed by heating milk at any one of the following temperatures for the time given :—131 deg. Fahr. for four hours, 140 for one hour, 149 for fifteen minutes, 158 for ten minutes, 176 for five minutes, 194 for two minutes, 203 for one minute. The objection to the taste of boiled milk is thus got rid of.

BRITISH INSTITUTE OF PREVENTIVE MEDICINE.—The Attorney-General has given his sanction to the sum of £25,000, the residue of the legacy of the late Mr. Richard Berridge, being given, in trust, to the British Institute of Preventive Medicine for the endowment of a laboratory devoted to the bacteriological and chemical examination of the water supply, with special reference to the best means of preventing the conveyance of disease through water. A large laboratory is now in course of erection for the purpose on the site secured by the institute at Chelsea, London.

THE NEW YORK PASTEUR INSTITUTE.—We are pleased to see by a note recently received from our friend and collaborator, Dr. Paul Gibier, President of the New York Pasteur Institute, that this excellent institute which, through the kindness of a wealthy New York philanthropist, has been provided with an ample and admirably fitted building, has completed another year of most successfnl work. Dr. Gibier sends us a tabulated statement of the work of the institute during 1893, the fourth year of its existence, and says : "You will notice that not a single case of hydrophobia has been observed among the eighty-five persons treated, while other persons and animals, bitten at the same time, have died of rabies. I am pleased also to inform you that the one hundred and four persons treated in 1892, whose cases you so kindly mentioned at the time, have remained well."

TUBERCULOSIS IN THE UNITED STATES OF AMERICA.—The slaughtering of tuberculosis cattle in New York State has been suspended for the present, the Board of Health having exhausted the money appropriated for indemnifying the owners. Rumour says that when it is resumed it will be by the Cattle Commission and not by the State Board of Health. A fortnight or so ago tuberculosis was discovered among the herd of Arthur Haine's farm near Haverhill, Mass. The first cow died, and another was quarantined. Some feeling was roused in this case (says the *Ploughman*) because authorities differed in their statements. The inspector said the cow was diseased, the State agent said she was not. The cow in question was afterwards killed, and an examination of lungs and intestines proved her to have been affected with the disease. Several other cases of tuberculosis in Haverhill have been reported, and the State agent is making an extended investigation.

DISEASE AMONG SHEEP IN NEW ZEALAND.—A New Zealand farmer writes to the *Mark Lane Express* under date of March 20th : "In all parts of the colony there are complaints of the unhealthy state of sheep. A gentleman, said to be of high standing in the veterinary profession, has lately arrived under engagement of the New Zealand Government to investigate this serious matter. He has already been into one district where large numbers of sheep have died. His full report has not yet been made public, but this much has appeared in the papers, that the cause, or one of the causes of the disease, is ascribed to the excessive amount of cocksfoot and Yorkshire-fog grasses in the pasture. My own experience inclines me to believe that this supposition is probably correct, for I have long been convinced that my own sheep have not continued in a thriving condition when feeding on the parts of

my farms where the feed is chiefly cocksfoot. I also find that many others have arrived at the conclusion that this grass is not a wholesome food, at least for sheep."

THE PASTEUR INSTITUTE.—The issue of the *Annales de l'Institut Pasteur* for May states that the number of persons under treatment there during the months of February and March was 217, of whom all but 19 were French. Of this total 24 had been bitten by animals experimentally proved to be mad, 128 by animals declared by veterinary certificate to be mad, and 65 by animals only suspected of being so. The bites were inflicted in 209 cases by dogs, in six by cats, and in one case each by a horse and a mule. Only one death was reported as having occurred during these two months, that of a boy named Joseph Robert, eight years of age, from Bougie, in Algeria. He was bitten on the 4th of October last by a dog which a veterinary surgeon at Bougie ascertained to be mad. The lad came to the Institut Pasteur at once, and was under treatment from the 10th to the 28th of October. He had been bitten in ten places on the hand and the thigh of the left leg, the wounds being cauterized five hours afterwards. He was seized with convulsions on the 16th February, and died within six hours, Dr. Perrusset, who attended him, being of opinion that the symptoms were scarcely those of hydrophobia.

A HOMŒOPATHIC VIEW OF TUBERCULIN.—Medical journals, says the *Breeders' Gazette*, are giving some attention to the tuberculin test, as witness the following from the *Homœopathic Envoy* for March:— "Scientific medicine will have to reverse itself soon, or the public will be deprived of beef, butter, cheese, and milk. It (scientific medicine) has got hold of the idea that any man or animal who 'responds' to Koch's tuberculin is consumptive, afflicted with tubercles, and therefore dangerous to the public health. As the public has a certain amount of personal liberty yet remaining, the health officers cannot inject this poison into people's arms at pleasure to see whether they are consumptive, though why this would not be quite as just as compulsory vaccination is a questing for debating societies. But animals have no such rights, and the State veterinarians go up and down the land with their bottles of consumptive virus and their syringes, and scientifically 'prove,' in the words of an allopathic journal, 'that even the healthiest animals are affected.' So, if these scientific men do their scientific duty in a scientific manner, it is only a question of time when the cow shall have joined the dodo. No healthy blood can receive an injection of this nasty virus without 'reacting,' but to do so, in case of a cow, is its death warrant."

Correspondence.

ELECTION OF MEMBERS OF COUNCIL.

DEAR SIR,—At the earnest request of several professional friends, I have been induced to offer myself as a Candidate at the ensuing Election for a seat on the Council.

It is true no great question is at the present moment agitating the profession, but still I think there are matters which demand increased attention at the hands of the Council. I refer especially to the laxity with which the Veterinary Surgeons Act of 1881 appears to be enforced. Something must be done to prevent unqualified persons from practising as Veterinary Surgeons, for even though no further legislative advantages may be obtained, yet much may be effected by a more stringent application of the powers we already possess.

Should I be elected on the Council, I shall endeavour to give special attention to this matter, with results which will, I trust, greatly benefit the profession.

In regard to the question of Advertising. I think the Council must approach this question wisely and carefully. I should support any measures which tended to suppress disgraceful advertisements, but, still, latitude must be given to those who have for years adopted certain methods of practice. I am of opinion, therefore, at the present time only flagrant cases should be dealt with; after a while, however, and when the time is ripe for it, advertising may be altogether forbidden.

The educational question still needs some share of attention, The Matriculation examination is now sufficiently advanced, but, in respect to the Professional Examinations, I think a more thorough practical test is needed. The student still, I fear, knows too little of the work by which he expects to live.

I think the time has arrived when the Council might approach the University of London, with a view to inducing that institution to hold special Veterinary Examinations, and grant a degree of Doctor of Veterinary Medicine.

I trust you will not deem it egotistical on my part if I venture to hope that the legal training which I have received in qualifying for a Barrister-at-law, will enable me to be of some additional service to the profession, and should you do me the honour of electing me, I shall have but one object in view, viz.: To advance the Veterinary profession, which at present, at any rate, occupies almost entirely the whole of my energies.

Yours faithfully,

W. F. BARRETT, M.R.C.V.S.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from R. Ward, Baltimore, U.S.A.; F. C. Mahon, London; V. S. Desmond, Waarnambool, Australia; H. Gray, London; W. Plannet, London; Dr. B. A. Katz, Görlitz, Germany; Veterinary-Captain J. A. Nunn, A.V.D., Lahore, India; T. Taylor, Ashton-under-Lyne; A. W. Hill, London; Veterinary-Lieutenant H. T. Pease, Meerut; D. James, London; Messrs. Arnold and Sons, London; W. F. Barrett, London; J. Abson, Sheffield; J. Lawrence-Hamilton, Brighton; E. Clarke, London; Professor McCall, Glasgow; R. A. N. Powys, London.

BOOKS AND PAMPHLETS: Bulletin of the Johns Hopkins Hospital; *G. Schneidemühl*, Lage der Eingeweide bei den Haussaugthiere, etc.; Jahresberichte der Königlich. Thierärztlichen Hochschule in München; *J. Dewitz*, Die Eingeweidewürmer der Haussäugthiere; Bulletin et Mémoires de la Société Centrale de Médecine Vétérinaire; Bulletin des Séances de la Société Nationale d'Agriculture de France; Civil Veterinary Department Ledger Series No. III.; *J. B. H. Moubis*, De Bewegingsorganen Van Het Paard; Bulletin de la Société Royal Protectrice des Animaux de Belgique; Nouveau Dictionnaire Pratique de Med. de Chir. et d'Hygiene Vétérinaires.

JOURNALS, ETC.: *Baily's Magazine; Veterinarian; Mark Lane Express; Thierarzt; Revue Vétérinaire; Edinburgh Medical Journal; Recueil de Médecine Vétérinaire; Live Stock Journal; Journal de Médecine Vétérinaire et de Zootechnie; Annales de Médecine Vétérinaire; Clinica Veterinaria; Presse Vétérinaire; Echo Veterinaire; American Veterinary Review; Tijdschrift voor Tandheelkunde; North British Agriculturist; Tijdschrift voor Veeartsenijkunde en Veeteelt; Journal of Comparative Medicine and Veterinary Archives; Modern Medicine and Bacteriological Review; Journal of the Royal United Service Institution.*

NEWSPAPERS: *Baltimore Sun; Wigton Advertiser; London Morning Advertiser; Crewe Guardian; Reading Mercury; Cheshire City News; Bradford Daily Telegraph.*